

SPC  
151

# OMI TASK CLOSEOUT CHECKLIST

OMI No. <i>56444 J-1</i>	Run No. <i>1</i>	Task Control No. (TCN) <i>2868276-F/R</i>
Start Date <i>7/18/01</i>	Completion Date <i>8/13/01</i>	Closure Date <i>8/17/01</i> <span style="float: right;">AUG 22 '01</span>

1. Deviation Index: Verify total number of deviations agree with index. Verify entry is correct into OMI.	QC/Eng.	Date
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ET 01</div> <span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span>	<div style="transform: rotate(-45deg);">AUG 22 '01</div> <div style="transform: rotate(-45deg);">8/17/01</div>
2. Constraints List: Verify all constraints are accepted by QC or waived by Engineering. Verify that constraints list is complete and closed. <i>SUBTASKED TO S0007 R. Seale ETM 8/17/01</i>	<span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span>	<div style="transform: rotate(-45deg);">AUG 22 '01</div>
3. IPR's: Verify that all IPR's are closed or upgraded to problem reports or dispositioned as no constraint to OMI closure and incorporated in central IPR system and a copy of the central IPR sort attached.	<span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span>	<div style="transform: rotate(-45deg);">AUG 22 '01</div>
4. Verify that material and equipment requirement list enclosed (if applicable).	N/A	N/A
5. OMI: Verify that all pages or verification sheets are completed, stamped, and dated in the lower left/right hand corners.	<span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span> <div style="border: 1px solid black; padding: 2px; display: inline-block;">ET 01</div>	<div style="transform: rotate(-45deg);">AUG 22 '01</div> <div style="transform: rotate(-45deg);">8/17/01</div>
6. OMI: Verify that all miscellaneous documents/procedures have sequence number referenced and stamped; e.g., photos, sample results, etc.	<span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span> <div style="border: 1px solid black; padding: 2px; display: inline-block;">ET 01</div>	<div style="transform: rotate(-45deg);">AUG 22 '01</div> <div style="transform: rotate(-45deg);">8/17/01</div>
7. Planned task/OMI satisfactorily completed. OPR: <i>R. Seale ETM 8/17/01</i> <span style="float: right;"><div style="border: 1px solid black; padding: 2px; display: inline-block;">ET 01</div></span>	<span style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">SPC 151</span> <div style="border: 1px solid black; padding: 2px; display: inline-block;">ET 01</div>	<div style="transform: rotate(-45deg);">AUG 22 '01</div> <div style="transform: rotate(-45deg);">8/17/01</div>
8. LSS review prior to closure for CIL OMI's. MMC <u>                    </u> N/A Thiokol <u>                    </u> N/A		

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## **SSV ICE AND DEBRIS ASSESSMENT**

Element/End Item: ALL  
Flow/Usage: ET-103 & SUBS  
Facility: LC 39  
Design Center Concurrence: MSFC/JSC  
Category: B  
OPR: ETM  
TTL ORG: SE

**This document contains  
HAZARDOUS operations.**

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## 1.0 INFORMATION

### 1.1 Objective

Provide necessary tasks that document, monitor and evaluate ice and debris conditions to eliminate or minimize debris concerns of the integrated SSV during ET tanking, FRF, launch, and associated detanking.

#### Description

1. This OMI is performed as subtask to S0007/S0014/S0037.
2. This OMI provides documentation of ice/debris activities:
  - A. Pre-launch icing briefing
  - B. Pre-launch debris inspection
  - C. Countdown - Based timeline evaluation monitoring of ET TPS surfaces using OTV
  - D. OTV monitoring of seal/flange areas for cryogenic leakage
  - E. SSV OTV monitoring for debris conditions during countdown
  - F. Cryogenic replenish inspection for evaluation of SSV and facility debris concerns or anomalies
  - G. Evaluation of concerns/anomalies in the event of ET detanking
  - H. Review of engineering film data for SSME ignition, launch, ascent, ET separation, and orbiter landing.
3. Orbiter landing debris information is contained in the NASA publication for Ice and Debris Assessment. That report is referenced in this OMI for continuity of debris data.

## 1.2 Special Instructions All Operations

1. This OMI is run as a subtask to OMI's S0007, S0014, and S0037. All PAD clearing and controlled access operations will be performed per those OMI's.
2. Constraints will be statused by controlling OMI's S0007/S0014/S0037.
3. The OTV camera numbering scheme for PAD A/B is 0XX/1XX.
4. Task Team Leader assignment: NASA PH-H is TTL for L-20 Hour Walkdown, Final Inspection, and Post Launch/Drain Walkdown. ETM is TTL for all other operations.
5. From time stable replenish mode starts until start of final SCAN, scanning with individual cameras should be performed approximately once per hour.
6. Cameras 061/161, 063/163, and 070/170 may be released to NASA select with CICE concurrence.
7. All personnel participating in final inspection and post drain walkdown shall be current in following training:
  - A. Emergency PAD egress
  - B. Fire fighting
  - C. ELSA
8. Milestones:
  - A. MLP portion of post launch walkdown commences at approximately T + 1 hours.
  - B. PAD acreage portion of the post launch walkdown commences at approximately T + 2 hours. (may be deferred until preferred daylight hours.)
  - C. Post drain walkdown commences at approximately T + 4 hours after drain initiated (typically 1 1/2 hours after LH<sub>2</sub>/LO<sub>2</sub> low level sensors dry).
9. Hands-on investigation required for all ET-TPS defects suspected of violating NSTS 08303 ice/debris inspection criteria.

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10. From time launch scrub is declared until 1.5 hours past time LH<sub>2</sub>/LO<sub>2</sub> low level sensors read dry, OTV camera scanning shall be performed approximately once per hour.
11. OTV cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171 shall be used to monitor LO<sub>2</sub>/LH<sub>2</sub> tank drain operations.
12. Excessive vapors are defined as being more severe than that described in NSTS 08303 - Ice/Debris Inspection Criteria or NSTS 16007 - Launch Commit Criteria - Hazardous Gas Subsystem.
13. Quality coverage is not required for performance of this OMI. Ref SFOC-GO0007, Ice and Debris Team Operations are exempt from quality coverage. The ROR (CTIF) performs the CMQC function for all non-hazardous operations.
14. Personnel using Sony DKC-ID1 camera shall verify lithium ion battery is securely locked in the bayonet fitting and the lithium button battery door is securely locked and taped in place.
15. Verify camera flash is deactivated.
16. Personnel using Kodak DC 50/120 camera shall verify alkaline batteries are properly installed.
17. Personnel using digital cameras shall not operate in H<sub>2</sub> leak or O<sub>2</sub> rich environment (23 percent or greater).
18. Personnel using the Sony MVC-FD91 camera shall verify the lithium ion battery is securely locked and the battery door is locked closed. Personnel shall verify that both battery doors (lithium ion and lithium button) are closed and taped shut.
19. Personnel shall verify that cameras and equipment are securely tethered when at the PAD while the SSV is present.

### 1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)
No.	Title				
10	Support Preparations	STM/ FR2	ETM	N	0.2
20	Ice Prediction Briefing	SE/ NA	ETM	N	0.5
30	Pre-launch Walkdown	SE/ NA	ETM	N	2.0
40	Ice Frost Debris Console Initial Configuration Setup	SE/ FR2	ETM	N	3.0
50	SSV Debris Assessment	SE/ FR2	ETM	N	18.0
60	Group 1 Monitoring LO2 Chill Down Thru T-0	SE/ FR2	ETM	N	15.0
70	Group 2 Monitoring - LH2 Chill Down Thru T-0	SE/ FR2	ETM	N	15.0
80	Final Inspection	SE/ FR2	ETM	Y	3.0
90	LO2/LH2 Drain Monitoring	SE/ FR2	ETM	N	4.0
100	Console Securing	SE/ FR2	ETM	N	0.5
110	Summary Tape	SE/ FR2	ETM	N	18.0
120	Post Drain Walkdown	SE/ NA	ETM	Y	2.0
130	Post Launch Walkdown	SE/ NA	ETM	Y	3.0
140	Film Review	SE/ NA	ETM	N	15.0
150	Final Report	SE/ NA	ETM	N	0.5



## 2.0 SAFETY INFORMATION

### 2.1 Hazards

#### Operation

1. Working at unprotected heights.
2. Walkdown at PAD while SSV is in stable replenish mode.

### 2.2 Safety Requirements

#### Operation

1. If lightning activity is forecast to be within 5 miles of launch PAD, CTC and SFOC safety shall implement provisions of adverse/severe weather and lightning policy contained in GSOP 5400 Ground Safety Operations Procedures.
2. There are no safing/shutdown or evacuation steps required in this OMI.
3. Hazardous operations within this subtask OMI will not be started until safety concurrence to proceed has been given per the integrated OMI controlling this subtask.

### 2.4 Reference Safety Documentation

Number	Rev	Title
KHB 1710.2	LI	KSC Safety Practices Handbook
GSOP 5400	LI	Ground Safety Operating Procedure

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### 3.0 STAGING REQUIREMENTS

#### 3.1 Referenced Engineering Documentation

##### 3.1.2 Documents

###### OPERATION 120

Document No.	Rev	Title
NSTS 08303	(LI)	NSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA

#### 3.2 Parts, Materials, Equipment, and Special Tools

##### 3.2.8 Personal Protective Equipment

OPERATION 30	Nomenclature safety harness lanyard
OPERATION 80	Nomenclature safety harness lanyard Nomex coveralls with gloves and hoods ELSA
OPERATION 120	Nomenclature safety harness lanyard hardhats flame retardant coveralls
OPERATION 130	Nomenclature safety harness lanyard hardhats flame retardant coveralls

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## 4.0 PLANNING REQUIREMENTS

OIR Required Yes [ ], No [ X ]

### 4.3 LPS Requirements

#### 4.3.1 Computer Systems

PC GOAL  
CCMS Configuration  
CDS  
CMS

#### GSE Links/HIMs

Link	FEP	Location	HIM	Octal Addr	Function
------	-----	----------	-----	------------	----------

#### DPS Configuration

OPS Mode - \_\_\_\_  
Dedicated DEU/DDU - \_\_\_\_

#### Vehicle Links and Formats

Link	FEP	Freq	Downlink	Downlist
------	-----	------	----------	----------

#### Control Room Consoles Required

#### SDC/RTIF Configuration

#### RPS Configuration

Link	Freq	Element	Downlink Format
------	------	---------	-----------------

#### ESA monitors/hot spares

#### CCS Configuration

Link	FEP	Location	HIM	Octal Addr	Function
------	-----	----------	-----	------------	----------

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CCS Consoles Required

#### 4.4 Support Services, Commodities, and Equipment

##### 4.4.2 Communications

(Per controlling OMI S0007, S0014 or S0037)

Voice Recording:

Radio nets:

Paging:

Area warning:

Portable radios (loan pool):

Type	Qty	Net/Freq	Record	Duration/Purpose
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Portable OIS units:

Special communications:

##### 4.4.3 OTV

(Per controlling OMI S0007, S0014 or S0037)

**OTV Cameras required:** 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171

**OTV Cameras to be recorded:** 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171

OTV Monitor:

Special OTV requirements:

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#### 4.4.4 Countdown Display/Status

<u>Display Required</u>	<u>Bldg</u>	<u>Room</u>	<u>Operation Time</u>
Timing	LCC	FR2	Duration of Test
Countdown and GMT	LCC	FR2	Duration of Test

#### 4.4.8 Services

<u>Service/Special Requirements</u>	<u>Location</u>	<u>Purpose</u>
SFOC Safety	LC-39 A&B	Safety Support
ELSA'S (8)	LC-39 A&B	Inspection Team Use
Radio Net 105	LC-39 A&B	Inspection Team Use

#### 4.4.12 Propellants, Gases and Chemicals

<u>Commodity</u>	<u>Spec No.</u>	<u>Quantity</u>	<u>Rcvr</u>	<u>Location</u>	<u>Minimum Press</u>	<u>Delivery Time</u>
GN <sub>2</sub>	SES-0073 -6.3-5	Min 750 Cu ft	PH-H 861-3645	Pad 39B Camera Site 2	3000 PSI	1 week prior to T-0

## 5.0 CONFIGURATION ACCOUNTING AND VERIFICATION

### 5.1 Specific OMRS Requirements Satisfied by this TOP

OMRS NO.	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)
S00E00.021	ET TPS MON DURING DETANK TAF;C	90-005
S00E00.031	POST DETANK ET TPS INSPECT TAF;C	120-002
S00FA0.900	PRELAUNCH WEATHER BRIEFING (L-1 DAY) VAF1-90	20-001
S00FB0.005 (1 )	ET TPS SURFACE MONITORING T23,27-29,31-999	60-012 70-012
S00FB0.350 (1 )	MONITOR GO2 VENT HOOD VAF1-90	50-021
S00FB0.360 (1 )	MONITOR ET/ORB MPS FOR LEAKAGE VAF1-90	70-012
S00L00.150	HIGH WIND ET NOSE INSPECTION SAF;C	50-018 60-012
S00U00.010 (1 )	POST LAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-999	130-002
S00U00.011 (1 )	ENGR REVIEW & ANALYSIS OF LAUNCH FILM SAF1-999	150-002
S00U00.020-A (1 )	AN ENGINEERING PAD INSPECTION TEAM SAF1-999	80-002
S00U00.020-C (1 )	INSPECT ORBITER AFT ENGINE SAF1-999	80-002
S00U00.020-D (1 )	INFRARED SURVEILLANCE SAF1-999	80-002
S00U00.030 (1 )	PRELAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-999	30-001

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## 5.5 List of References

### OPERATION 20

Reference No.	Rev
NSTS 16007	(LI)

Title
NSTS Program Launch Commit Criteria - Hazardous Gas Subsystem and Appendix F

### OPERATION 30

Reference No.	Rev
80901019010	(LI)

Title
ET Post Build Acceptance and In-Process Rework Requirements Manual - Offsite

### OPERATION 40

Reference No.	Rev
79K24576	(LI)
79K24522	(LI)

Title
OTV System Installation, LC 39, Pad A
OTV System Installation, LC 39, Pad B

### OPERATION 50

Reference No.	Rev
SPI SP-519	(LI)
SFOC GO0007	(LI)

Title
OMI and OM Implementation
Quality Planning Requirements Document (QPRD)

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## OPERATION 10 Support Preparations

Shop: STM  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 0.2

10-1 STM JYVO 138

Verify PAD OTV system is configured to support S6444 as scheduled.

Support: COMM

10-2 STM JSTC 111  
JSTC \*SCB 114

Verify eight 10-minute ELSA's available at complex J for use by Final Inspection Team (ref S0007/S0014/S0037).

Support: LS

10-3 STM TBC 136

Operation - Support Preparations complete.

\*\*\* End of Operation 10 \*\*\*

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## OPERATION 20 Ice Prediction Briefing

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 0.5

### NOTE

Ref: NSTS 16007 (LI) NSTS Program Launch Commit Criteria - Hazardous Gas Subsystem and Appendix F defines the ET No-Ice Zone.

#### 20-1 CICE

Conduct L-1 day ice prediction briefing with launch director.

PH-H Signature

*Armando Oliva* 8/7/01  
Armando Oliva - NASA

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#### 20-2 Operation - Ice Prediction Briefing complete.

\*\*\* End of Operation 20 \*\*\*

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### OPERATION 30 Pre-launch Walkdown

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: PAD  
Hazard (Y/N): N  
Duration (Hrs): 2.0

#### WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

#### NOTE

This operation is performed at approximately L-20 hours. When this operation is performed in support of a 24 hour scrub turnaround, the preceding launch scrub post drain walkdown and this pre-launch walkdown may be performed concurrently.

Inspections may also be performed from the RSS, GO<sub>2</sub> Vent Arm (GVA), -Y OWP, or +Y OWP if still extended and accessible.

Ref: 80901019010 (LI) ET Post Build Acceptance and In-Process Rework Requirements Manual - Offsite

NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are optional walkdown participants.

NASA Engr	(4)
SFOC Engr	(2)
LMSSC - LSS	(1)
Boeing - LSS	(1)
SRB ELE	(1)
Thiokol - LSS	(1)

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30-1 Debris inspection team **perform** walkdown of SSV and MLP per following:

1. Team leader **verify** S6444 pre-test briefing complete.
2. **Assemble** following essential personnel  
  
NASA PH-H Engineering - 1  
SFOC ETM Engineering - 1
3. **Inspect** following areas (as a minimum) from the MLP, RSS and FSS to identify/ resolve potential debris sources.

Areas to be inspected

A. Launch vehicle external surfaces

- Orbiter
- SRB's
- External Tank

B. MLP surfaces

- LH and RH SRB holddown posts
- Deck including deck bolts, fixtures, and edge gutters
- SSME LH and RH SRB exhaust openings, and sound suppression (SS) troughs
- TSM's and camera housings

4. Ref Table 30-1, **document** and SIM Photograph SSV and Launch PAD Configuration.

Description: Pre launch walkdown.

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- 30-2 Record all facility discrepancies in S0007. Submit copy to PAD leader and notify TBC/CTC. Verify no constraints to continue.

PH-H Armando Olia - NASA Date 8/8/01

ETM Wm Richards II Date 8/9/01

- 30-3 Operation - Pre-launch Walkdown complete.

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Table 30-1 Photo Requirements for SSV and Launch Pad Configuration			
Photos from MLP			
<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
ET -Z	Vertical	28 mm	
Aft Dome	Horizontal	28 mm	
Aft Dome	Horizontal	35-70 mm	
LH SRB from North	Horizontal	35-70 mm	All water troughs in view
LH SRB from North	Vertical	35-70 mm	3-4 water troughs in view
LH SRB from East	Vertical	35-70 mm	
RH SRB from North	Horizontal	35-70 mm	All water troughs in view
RH SRB from North	Vertical	35-70 mm	3-4 water troughs in view
RH SRB from West	Vertical	35-70 mm	
SRB Heater Elec T-0	Horizontal	35-70 mm	Foam intrusion; May need flash
North HDP	Vertical	35-70 mm	Representative view
South HDP	Vertical	35-70 mm	Representative view
TSM T-0 LH <sub>2</sub>	Vertical	35-70 mm	Flash needed
TSM T-0 LO <sub>2</sub>	Vertical	35-70 mm	Flash needed
Orbiter Left & Right Wing	Vertical	35-70 mm	From below ET (1 Photo each wing)

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### 135 Ft Level Photos

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
LO <sub>2</sub> UMB	Vertical	35-70 mm	From OWP usually during T5401
LH <sub>2</sub> UMB	Vertical	35-70 mm	From OWP usually during T5401

### 215 Ft Level Photos

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
ET surfaces from FSS	Vertical	35-70 mm	
LH SRB Frustrum and FWD skirt	Vertical	35-70 mm	
RH SRB Frustrum and FWD skirt	Vertical	35-70 mm	
Jack Pad C/O's	Horizontal	35-70 mm	Flash needed (1 each C/O)
LO <sub>2</sub> Ogive Cable Tray	Vertical	35-70 mm	From RSS roof

### 255 Ft Level Photos

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
ET surfaces with GO <sub>2</sub> vent ducts in view	Vertical	35-70 mm	
GO <sub>2</sub> vent ducts	Horizontal	250 mm	

\*\*\* End of Table 30-2 Photo Requirements for SSV and Launch Pad Configuration

\*\*\* End of Operation 30 \*\*\*

STEP 30-1

**STS-105 PRE-LAUNCH PAD DEBRIS INSPECTION REPORT**

KSC Debris Team

08 August 2001

The pre-launch inspection of the MLP-3, Pad A FSS and RSS was conducted on 8 August 2001 from 1600 to 1830 hrs EDT. No flight hardware issues/anomalies were detected.

No facility items were documented in Appendix K of S0007VL4. Minor clean-up items were in-work.

The west OWP corrugated sheeting was missing a fastener head on the groove wedge. This was documented on a facility PR (PV-6-377725). However, Debris Team expressed concern that wedge may not be held in place by remaining fastener portion (see attached photos). The decision was made to secure wedge with another fastener. This item was in-work at the conclusion of the Debris Inspection.

Additional Pad work, including prep's for RSS rollback, were in-work at the conclusion of the Debris Inspection.

Armando Oliu, NASA

Robert Speece, NASA

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## OPERATION 40 Ice Frost Debris Console Initial Configuration Setup

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 3.0

### NOTE

The next step sets up the photo processing laptop for use in the Firing Room. This is not a constraint to set up of the console or to final inspection team operations. Network or equipment failures on the photo processing machine shall be annotated below.

WC 013 USA No. 01 Dev. 40-1  
See Dev. 40-1  
ET 01 8/9/01  
Connect to KSC ground ops network and **configure** laptop computer to perform photo processing/ analysis.

Notes \_\_\_\_\_

### NOTE

The next step verifies the setup of the infrared scanners. This is not a constraint to set up of the ice console. IR scanner condition shall be annotated below.

40-2 Verify IR scanner operation condition, annotate below.

RSS: NOT OPERATIONAL

CS 2: Ready

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**NOTE**

The next step verifies the operation of console monitors in the Firing Room. This is not a constraint to set up of the console or to final inspection team operations. Equipment condition shall be annotated below.

40-3      Verify console condition by powering on monitors and tape recorders.

Monitors: OK

Tape recorders: OK

**NOTE**

ET OTV pre-mapping/initial position of cameras may be performed in random order.

Ref: 79K24576 (LI) OTV System Installation, LC 39, Pad A and

Ref: 79K24522 (LI) OTV System Installation, LC 39, Pad B define OTV camera locations.

FOV designates field-of view. RSS and -Y OWP must be retracted for completion of pre-mapping.

Pre-mapping steps/substeps in the remainder of this operation need not be performed if supporting a scrub turnaround and if performed during a previous run.

It is preferred to record all pre-mapping scanning on a single tape. However, multiple tapes may be used when lighting/ launch countdown constraints necessitate such.

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

40-4 CVM1 JTV1 223

**Perform** OTV pre-mapping of External Tank exterior surfaces using OTV Cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, and 067/167 as follows:

- **Insert** designated pre-map tape into trouble console VCR.
- **Punch-up** camera number on trouble monitor.
- **Start** recording on pre-map tape. **Record** start time (GMT).
- **Scan** from top-to-bottom, left-to-right and right-to-left at approximately full zoom-in.
- **Stop** recording on pre-map tape. **Record** stop time (GMT).
- **Record** data in Table 40-1.
- **Repeat** with each OTV camera listed until each has been used to scan the External Tank.
- **Remove** pre-map tape from trouble console VCR.

ETM R Brewer Date 8-09-01

Not Performed: N/A

40-5 CVM1 JTV1 223

**Position** OTV Cameras 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 070/170, and 071/171 to initial positions as defined in Table 40-2.

ETM R Brewer Date 08-09-01

Not Performed: N/A

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 40-1 ET Pre-Mapping Data		Tape # 67
OTV Camera	Start Time (GMT)	Stop Time (GMT)
004 / 104	10:51	10:59
009 / 109	11:34	11:42
013 / 113	10:43	10:49
033 / 133	11:15	11:22
042 / 142	11:36	11:43
054 / 154	11:27	11:41
055 / 155	11:14	11:23
056 / 156	11:24	11:36
060 / 160	10:33	10:42
061 / 161	10:24	10:35
062 / 162	10:38	10:50
063 / 163	10:46	10:52
064 / 164	11:02	11:18
065 / 165	11:11	11:18
066 / 166	11:22	11:36
067 / 167	10:57	11:08

Notes: Some SUN SPOTS, Some DARK AREAS  
NO PROBLEMS

ET  
01

8/9/01

Table 40-2 OTV Camera Initial Positions	
OTV Camera	Initial Position
004 / 104	FOV centered on GUCP
009 / 109	FOV on LH <sub>2</sub> Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 063/163 and 064/164.
013 / 113	Full zoom in. View SW GO <sub>2</sub> Vent Louver area.
033 / 133	FOV perpendicular to ET and with LO <sub>2</sub> -to-Intertank splice at frame top and LH <sub>2</sub> -to-Intertank splice at frame bottom. Then tilt down until XT2058 is in frame center.
042 / 142	FOV centered on Orbiter Access Arm-to-Orbiter interface.
054 / 154	FOV to encompass approximately 3 feet forward of XT2058 to 2 feet aft of XT2058. Orbiter wing and SRB should be in view at frame left.
055 / 155	Set FOV on north bridge LH <sub>2</sub> pipeline flange.
056 / 156	FOV with LH <sub>2</sub> Aft Dome in frame bottom and XT2058 in view at frame top.
060 / 160	Full zoom in. View SW GO <sub>2</sub> Vent Louver area.
061 / 161	Full zoom-in. Adjust FOV until ET LO <sub>2</sub> -to-Intertank splice is centered vertically and view is perpendicular to ET. Pan right until edge of the ET comes into view. Note: LO <sub>2</sub> Tank may pass out-of-view.
062 / 162	Full zoom in. View NW GO <sub>2</sub> Vent Louver area.
063 / 163	FOV on LH <sub>2</sub> Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 009/109 and 064/164.
064 / 164	FOV on LH <sub>2</sub> Umbilical including ET/Orbiter interface. Vary close-up and wide angle views with 009/109 and 063/163.
065 / 165	Full zoom out. Set FOV on aft part of ET with frame bottom approximately 2 feet below LH <sub>2</sub> Aft Dome.
066 / 166	FOV perpendicular to ET with LO <sub>2</sub> -to-Intertank splice at frame top. Then tilt down until Orbiter RH Wing/SRB intersection is in frame lower right.
067 / 167	Set FOV with LH <sub>2</sub> Aft Dome toward frame bottom and 2 <sup>nd</sup> black ring of SRB in view.
070 / 170	Select down wind camera of these two as wide angle view of the SSV.
071 / 171	Set up wind camera for close-up view of SSME's.

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

40-6 Operation - Ice Frost Debris Console Initial Configuration Setup complete.

ETM R Brewer Date 08-09-01

\*\*\* End of Operation 40 \*\*\*

ET  
01

8/9/01

40-6

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

## OPERATION 50 SSV Debris Assessment

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 18.0

### NOTE

Steps in this operation are contingent upon progression of launch countdown operations and may not be performed if countdown is terminated.

Entire Operation Not Performed: N/A

### NOTE

Until otherwise indicated, all times are referenced to S0007, S0014 or S0037 timelines.

No operations/steps within this subtask OMI may be performed as a stand-alone procedure. This OMI may only be performed as a subtask to S0007/S0014/S0037.

### NOTE

Ref: SPI SP-519 (LI) OMI and OM Implementation and Ref: SFOC GO0007 (LI) Quality Planning Requirements Document (QPRD) , following step complies with requirements for ROR-as-CMQC function.

50-1

CTIF	TBC
TBC	CMQC 136

Notify TBC that CTIF will perform the CMQC function for STS /05, S6444 run /. Request TBC notify CMQC that the ROR-as-CMQC option will be exercised for STS /05, S6444 run /.

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-2

CTC	TBC	232
TBC	CTIF	136

Perform OTV and ice/frost monitoring area setups.

ETM R. Brewer Date 8-9-01

50-3

CTIF	TBC	136
TBC	CTC	
CTC	STM	232

Verify Operation 10- Support Preparations complete.

ETM Mark W. Blum Date 8-9-01

50-4

CTIF

Verify Operation 20 - Ice Prediction Briefing and Operation 30- Pre-launch Walkdown complete.

ETM ME 08 Date 8-9-01

ET  
01

8/9/01

50-2



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-5

CTIF CVM1 222  
CVM1 222

Verify:

- All OTV cameras are on, tapes in recorder, and ready to commence OTV scanning, monitoring, and recording.
- Trouble tape recorder is ready.
- Ice Frost Debris Console Initial Configuration Setup complete.

ETM R Brewer Date 8-9-01

50-6

CTIF CICE 222  
CVM1  
CVM2  
CIPC  
CTIF JYVR 138  
CVM1 JTV1 223  
CVM2 JTV2 225

OW  
Oct  
AGU

OW  
Oct  
AGU

All personnel participating in OTV operations **report** test ready status.

ETM R Brewer Date 8-9-01

Support: COMM

50-3

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-7

CTIF	TBC	136
TBC	CTC	232

Ice Frost Console Area Setups for OTV scanning complete.  
**Report** readiness.

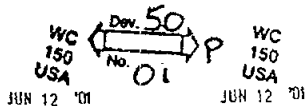
ETM R Brewer Date 8/9/01

Not Performed: N/A

50-8

CTIF CVM1 222

From start of LO<sub>2</sub> chilldown until seal deflation/GO<sub>2</sub> vent hood retraction, **monitor** the +Y/-Y GO<sub>2</sub> vent seal-to-ET interface for seal fretting and continuous GO<sub>2</sub> escape.



OMRS 500FB0.350-1

ETM ME 08 Date 8-9-01

Not Performed: N/A

ET  
01

8/9/01

50-4

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

NOTE

GO<sub>2</sub> vent seal fretting could induce damage to ET SOFL. Continuous GO<sub>2</sub> venting could result in formation of ice in the no ice zone (ref NSTS 16007). Ultimate decision to lift the vent hood rests with CMEC.

50-9

CTIF TBC 136  
CMEC

If +Y/-Y GO<sub>2</sub> vent seal fretting or continuous GO<sub>2</sub> escape detected from start of LO<sub>2</sub> chilldown until seal deflation, **notify** CMEC for GO<sub>2</sub> vent hood removal.

ETM N/A Date N/A

Not Performed:

ME  
08

8-9-01

50-10

CTIF CIPC 222

**Monitor** wind speed and direction from start of LO<sub>2</sub>/LH<sub>2</sub> chill down through launch/scrub. CIPC **notify** CTIF if winds measured at 38 knots or greater from North +/-30 degrees as measured at 60 feet.

ETM ME  
08 Date 8-9-01

Not Performed: N/A

WC  
150  
USA  
JUN 12 '01

Dev. 50  
No. 01 P

ET  
01

8/9/01  
SEE DEV

50-5

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-11

CTIF CVM1 222

Perform Operation 60 - Group 1 Monitoring.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

50-12

CTIF CVM2 222

Perform Operation 70- Group 2 Monitoring.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

50-13

CTIF CVM2 222

Once per hour minimum, after start of LO<sub>2</sub>/LH<sub>2</sub> (until LO<sub>2</sub>/LH<sub>2</sub> low level sensors read dry), scan LO<sub>2</sub> feed line brackets and flange closeouts per Table 50-1.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

ET
01

  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-14

CTIF CICE 222

As count proceeds, for concerns/ observations identified:

1. **Record** observation/concern on trouble tape per Table 50-1.
2. **Document** observed condition on Table 50-2, Observation Worksheet.

ETM 

ME
OB

 Date 8-9-01

Not Performed: N/A

50-15

TBC CTIF 136  
CTIF CICE 222

**Perform** Operation 80 - Final Inspection when called by  
S0007/S0014/S0037.

ETM 

ME
OB

 Date 8-9-01

Not Performed: N/A

50-7

ET
01

  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

**NOTE**

Final SSV scan typically commences at L-2 hours.

50-16

CTIF CVM1 222  
CVM2

Perform final SSV scan.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

50-17

CTIF CVM1 222  
CVM2

At start of T-9 minute hold, **configure** OTV cameras for terminal count.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

ET
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-18

WC 150 USA  
Dev. 50  
No. 01  
JUN 12 '01

If winds are from the north (+/-30 degrees) and are 38 knots or greater: <sup>(PEAK AS MEASURED AT 60 FEET ABOVE GROUND)</sup> OR GREATER.

1. Monitor/videotape nose cone area during high winds.

2. Verify:

A. No ice formation on the +Y and -Y GO<sub>2</sub> vent seal footprint areas.

B. No damage to the ET TPS at the +Y and -Y GO<sub>2</sub> vent seal footprint areas.

C. No damage to the +Y and -Y GO<sub>2</sub> vent seals themselves.

D. No evidence of GO<sub>2</sub> leakage from +Y/-Y GO<sub>2</sub> vent seals to ET interface.

USA  
VM  
067

OMRSD S00L00.150

ETM N/A Date N/A

Not Performed: 

ME
08

  
8-9-01

50-19

CTIF

Verify launch or launch scrub (drain back). Record data.

Launch N/A Scrub X

Date 8-9-01 GMT Time 21:14 <sup>①</sup> 21:28 GMT  
~~X START OF WORK PERIOD~~

Scrub at T- 9 min

① EIE  

ME
08

  
8-9-01

WC 150 USA  
Dev. 50  
No. 01  
JUN 12 '01

SEE  
ET 01  
8/9/01  
DEV

ETM 

ME
08

 Date 8-9-01

50-9

ET
01

  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

**NOTE**

When completely filled and drain is initiated, it takes approximately 1 hour until the LH<sub>2</sub> tank low level sensors read dry, and approximately 1.5 hours until the LO<sub>2</sub> tank low level sensors read dry.

50-20

CTIF CVM1 222  
CVM2

If launch scrubbed (or drain back declared) after start of LO<sub>2</sub>/LH<sub>2</sub> slow fill mode:

- Perform Operation 90 - LO<sub>2</sub>/LH<sub>2</sub> Drain Monitoring.
- Record observations/concerns on trouble tape per Table 50-1.
- Document all observations/concerns on Table 50-2 Observation Worksheet.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

50-21 CTIF

GO<sub>2</sub> Vent seal to ET interface monitoring for seal fretting and continuous GO<sub>2</sub> escape complete.

OMRSD S00FB0.350-1

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

ET  
01  
8/9/01



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-22

CTIF CVM1 222  
CVM2

Terminate scanning operations.

ETM 

ME
08

 Date 8-9-01

50-23

CTIF CVM1 222  
CVM2

Perform Operation 100 - Console Securing.

ETM 

ME
08

 Date 8-9-01

50-24

CTIF

If LO<sub>2</sub>/LH<sub>2</sub> tanking started, perform Operation 110 - Summary  
Tape.

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

**NOTE**

Following step may be not performed at CTIF discretion.

50-25      CTIF      TBC      136  
             TBC      STM

If Post Drain Walkdown to occur at night, **request** PAD xenon lighting be maintained/activated for duration of walkdown.

Not Performed:

ET  
01  
8/9/01

**NOTE**

Post drain walkdown typically commences approximately 1.5 hours after LH<sub>2</sub>/LO<sub>2</sub> low level sensors read dry.

50-26

**CTIF**

If launch scrubbed after start of LO<sub>2</sub>/LH<sub>2</sub> tanking, **perform** Operation 120 - Post-Drain Walkdown.

ETM

ME  
08

Date 8-9-01

Not Performed: N/A

50-27

**CTIF**

If launch occurred, **perform** Operation 130 - Post launch Walkdown.

ETM

N/A

Date N/A

Not Performed:

ME  
08  
8-9-01

ET  
01  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

50-28

CTIF

If launch occurred, **perform** Operation 140 - Film Review.

ETM N/A Date N/A

Not Performed: 

ME
08

  
8/9/01

50-29

SSV Debris Assessment complete.

50-13

ET
01

  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-1 Observation Documentation Procedure

1. CTIF CVM1 222 Locate anomaly/concern on pertinent OTV(s)  
CVM2
2. CTIF Punch-up pertinent OTV on trouble monitor.  
Update trouble tape log in table below.
3. CTIF Start the trouble tape.

**NOTE**

Trouble tape shall be allowed to run until sufficient OTV documentation of observation/concern has been made. OK to change OTV's while trouble tape is running.

4. CTIF After observation/concern has been documented on the trouble tape, stop the trouble tape. Update trouble tape log below.

**TROUBLE TAPE LOG**

Trouble Tape No.	Start Time (GMT)	Stop Time (GMT)	OTV	Description
01	12:58	12:59	68/69	LOUVER ON <sup>(-Y)</sup> 68 PARTIALLY "COVERED"
01	13:54	13:56	54	LOX FEEDLINE SCAN
01	14:55	14:58	54	LOX F/L SCAN
01	15:54	15:56	54	LOX F/L SCAN
01	17:03	17:03	54	LOX F/L SCAN
01	17:55	17:59	54	LOX F/L SCAN
01	18:58	18:59	54	LOX F/L SCAN
01	20:06	20:07	54	LOX F/L SCAN
01	20:48	20:49	54	FROST BALL ON +Y VERT STRUT
01	21:02	21:04	54	LH2 AFT DOME INTERFACE LOX F/L SCAN

ET  
01  
8/9/01



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. 2

Observed By: W Richards

Date 8-9-01 Time 16:49 GMT 20:49

Camera No. (or Walkdown) 68

Description:

<sup>①</sup> ~~LOK~~ SEAL APPEARS TO LAP OVER THE VENT

Acceptance Rationale (or IPR/PR No.):

CMEC DATA AND IR SCANS SHOW NO EVIDENCE  
OF LEAK

FURTHER, FINAL INSPECTION TEAM FOUND NO EVIDENCE  
OF LEAK. •

CICE Armando Oliva Date 8/09/01  
CTIF Armando Oliva - NASA Date 8/09/2001

ET  
01  
8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. 1

Observed By: W Richards

Date 8-9-01 Time 16:49 GMT 2049

Camera No. (or Walkdown) 54

Description:

FIRST BALL ON TY VERTICAL STRUT INTERSECTION  
LOFTY FT AFT DOME ALSO NOTED 2N  
WALK DOWN

Acceptance Rationale (or IPR/PR No.):

ANALOGOUS TO PHOTO 2.2.7 OF NSTS 08303.  
ACCEPTABLE

CICE Armando Olin  
CTIF Armando Olin - NASA

Date 8/09/01

Date 8-09-2001

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
N/A  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

ET  
01

8/9/01



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

N/A

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

N/A

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

N/A

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

Table 50-2 Observation Worksheet

OBSERVATION DOCUMENTATION

Record following information for condition observed:

Observation No. \_\_\_\_\_

Observed By: \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ GMT \_\_\_\_\_

Camera No. (or Walkdown) \_\_\_\_\_

Description:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Acceptance Rationale (or IPR/PR No.):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ N/A

CICE \_\_\_\_\_ Date \_\_\_\_\_

CTIF \_\_\_\_\_ Date \_\_\_\_\_

\*\*\* End of Table 50-2 Observation Worksheet \*\*\*

\*\*\* End of Operation 50 \*\*\*

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

## OPERATION 60 Group 1 Monitoring LO<sub>2</sub> Chill Down Thru T-0

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 15.0

### NOTE

Do not perform this operation if launch scrub declared before LO<sub>2</sub> Chill Down commences.

Operation Not Performed: N/A

### NOTE

This operation monitors LO<sub>2</sub> Ogive and Barrel and associated components/ areas from start of Chill Down through T-0 via OTV cameras 013/113, 060/160, 061/161, 062/162, 063/163 and 064/164.

OTV cameras 013/113 and/or 062/162 will view -Y GO<sub>2</sub> Vent Hood Seal at all times. At no time will both cameras be positioned away from the -Y GO<sub>2</sub> Vent Hood Seal.

OTV cameras 068/168 and 069/169 view SW and NE GO<sub>2</sub> Vent Areas respectively. These are fixed FOV cameras and do not have pan, tilt, etc. capability.

Steps in this operation are contingent upon progression of launch countdown operations and may be not performed if countdown is terminated.

Noted requirements satisfied by completion of this operation.

OMRS S00FB0.005-1-

OMRS S00L00.150-1-

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USA  
JUN 12 '01  
Dev. 60  
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APPROVED

OMI S6444 J01  
APPROVED

### LO<sub>2</sub> Chill Down To L-2 Hour Mark

60-1 CVM1 JYVR 138

At start of vehicle LO<sub>2</sub> Chill Down, start recorders for cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169.

ETM R Brewer Date 8-9-01

Support: COMM

60-2 Record LO<sub>2</sub> MPS Chill Down start date and time (GMT).

LO<sub>2</sub> MPS Chill Down Date 8/9/01 GMT Time 12:26 GMT

ETM R Brewer Date 8/9/01

60-3 CVM1 JTV1 223

From start of LO<sub>2</sub> Chill Down until start of LO<sub>2</sub> Fast Fill on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169 **monitor/videotape** ET-TPS surfaces. No cryogenic liquid or excessive vapors allowed.

ETM R Brewer Date 8/9/01

Support: COMM

Not Performed: N/A

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APPROVED

OMI S6444 J01  
APPROVED

60-4 Record LO<sub>2</sub> Slow Fill start date and time (GMT).

LO<sub>2</sub> Slow Fill Date 08-09-01 GMT Time 12:59 GMT

ETM R Brewer Date 08-09-01

Not Performed: N/A

60-5 Record LO<sub>2</sub> Fast Fill start date and time (GMT).

LO<sub>2</sub> Fast Fill Date 08-09-01 GMT Time 13:12 GMT

ETM R Brewer Date 08-09-01

Not Performed: N/A

60-6 CVM1 JTV1 223

From start of LO<sub>2</sub> Fast Fill until LO<sub>2</sub> stable replenish mode is established, **monitor/videotape** ET-TPS surfaces on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169. **Scan** LO<sub>2</sub> Tank. **Alternate** cameras and **scan** from Intertank to LO<sub>2</sub> Barrel Splice to GO<sub>2</sub> Vent Hood. No cryogenic liquid or excessive vapors allowed.

ETM R Brewer Date 08-09-01

Support: COMM

Not Performed: N/A



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

60-7 Record LO<sub>2</sub> Topping date and time (GMT).

LO<sub>2</sub> Topping Date 08-09-01 <sup>①</sup>15:12 GMT Time 15:12 GMT

ETM R Brewer Date 08-09-01

Not Performed: N/A

60-8 Record LO<sub>2</sub> Stable Replenish mode start date and time (GMT).

LO<sub>2</sub> Stable Replenish Date 08-09-01 GMT Time 15:21 GMT

ETM R Brewer Date 08-09-01

Not Performed: N/A

60-9 CVM1 JTV1 223

From time LO<sub>2</sub> Stable Replenish mode is established until time for final SSV scan (approximately L-2 hours), **monitor, scan and videotape** ET-TPS surfaces on OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163, 064/164, 068/168, and 069/169. No cryogenic liquid or excessive vapors allowed.

Support: COMM

ETM R Brewer Date 08-09-01

Not Performed: N/A

① ERROR -  
RB 8-9-01

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OMI S6444 J01  
APPROVED

### Final SSV Inspection Scan

#### NOTE

Final SSV Inspection Scan should begin not later than 1.5 hours prior to start of T-9 minute hold (approximately L-2 hours) to allow ample time to finish. Final SSV Inspection Scan shall include the ET, SRB's and the Orbiter.

Final scan may be altered or partially performed in the event that time constraints will not permit a complete SSV scan prior to start of T-9 minute hold.

During Final SSV Inspection Scan the camera lights on OTV cameras 061/161 and 062/162 shall be turned "Off" when view passes over the Orbiter cockpit to preclude "distracting" the Flight Crew.

60-10 CVM1 JTV1 223

**Perform** Final SSV Inspection Scan with OTV cameras 004/104, 013/113, 060/160, 061/161, 062/162, 063/163 and 064/164. Scan passes shall view entire SSV with cameras at approximate full zoom in during final scan.

ETM R Brewer Date 08-09-01

Not Performed: N/A

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

### Terminal Count Camera Positions

#### NOTE

This step performed for SSME ignition only and may be not performed if launch is scrubbed prior to pick-up of T-9 minute count. Cameras must be positioned for ignition no later than T-9 minutes. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition in an arbitrary order.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for OTV operators to rehearse camera movements.

CVM1 camera positions for SSME ignition are defined in Table 60-1.

60-11 CVM1 JTV1 223

Ref Table 60-1, position cameras 004/104, 013/113, 042/142, 054/154, 060/160, 062/162 for terminal count.

ETM 

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 Date 8-9-01

Support: COMM

Not Performed: N/A

60-12 Completion of this operation satisfies noted OMRS requirements.

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JUN 12 '01

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USA  
JUN 12 '01

~~OMRSD S00FB0.005-1~~  
~~OMRSD S00L00.150~~

ETM \_\_\_\_\_ Date \_\_\_\_\_

60-13 Operation - Group 1 Monitoring - LO<sub>2</sub> Chill Down Thru T-0 complete.

ET  
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APPROVED

OMI S6444 J01  
APPROVED

**Table 60-1 CVM1 Camera Positions for Terminal Count**

**NOTE**

This Table defines CVM1 camera positions for terminal countdown. Cameras should be positioned for ignition no later than pick-up of T-9 minutes count. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition non-sequentially.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for operators to rehearse camera movements with ice console.

The GO<sub>2</sub> Vent Arm (GVA) retracts at T-2m30s.

**CVM1 Camera Positions Are Defined As Follows:**

**004/104**

GUCP centered in frame so that GUCP will stay in view throughout SRB "twang".

**042/142**

At approximately T-1 hour, view and monitor Orbiter access arm while Orbiter hatch is being closed.

At T-7m30s, watch Orbiter access arm retract, then view bipod strut in center of frame, LO<sub>2</sub> feedline fairing in top of frame, and Orbiter hatch in right of frame.

**054/154**

At T-3m50s, view Orbiter right hand body flap movement, then zoom out with Orbiter/ET umbilicals at approximate frame center, Orbiter trailing edge at frame bottom, and edge of +Y (RH) SRB just in view at frame right.

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OMI S6444 J01  
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**Table 60-1 CVM1 Camera Positions for Terminal Count**

**013/113**

At T-2m30s, watch lift of GO<sub>2</sub> vent arm for debris and nose cone/vent louvers for ice damage. Immediately following lift of GO<sub>2</sub> vent arm, center frame on GO<sub>2</sub> vent louver and then zoom-out so that entire ET movement is seen during SRB 'twang' at SSME ignition.

**060/160**

At approximately T-2m30s, after GO<sub>2</sub> vent arm retracts, go full zoom in for a close-up inspection of the GO<sub>2</sub> vent louver. After CICE concurrence, go full zoom out and position camera with SSV centered and ET nose cone at frame top.

**062/162**

At approximately T-2m30s, after GO<sub>2</sub> vent arm retracts, go full zoom in for a close-up inspection of the -Y GO<sub>2</sub> vent louver. After CICE concurrence, zoom out until ET nose spike is at top of frame with ET centered.

**061/161**

At approximately T-4m00s, verify camera lights are off. Then position camera to view astronaut closing visor at T-2 minutes 00 seconds.

**068/168 and 069/169**

Immediately after GO<sub>2</sub> vent hood lift, turn lights off to preclude distracting orbiter crew when the GVA rotates to its latchback position.

**\*\*\* End of Table 60-1 Camera Positions for Terminal Count \*\*\***

**\*\*\* End of Operation 60 \*\*\***

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8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

## OPERATION 70 Group 2 Monitoring - LH<sub>2</sub> Chill Down Thru T-0

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 15.0

### NOTE

Do not perform this operation if launch scrub declared before start of LH<sub>2</sub> Chill Down.

Operation Not Performed: N/A

### NOTE

This operation monitors LH<sub>2</sub> Barrel and associated components/areas start of LH<sub>2</sub> Chill Down to pre-pressurization via OTV cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167.

Steps in this operation are contingent upon progression of launch countdown operations and may be not performed if countdown is terminated.

Noted requirements satisfied by completion of this operation.

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~~OMRS S00FB0.360-1~~

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JUN 12 '01 JUN 12 '01

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APPROVED

OMI S6444 J01  
APPROVED

### LH<sub>2</sub> Chill Down To L-2 Hour Mark

70-1 CVM2 JYVR 138

At start of LH<sub>2</sub> Chill Down, start recorders for cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167.

ETM R Brewer Date 8/9/01

Support: COMM

70-2 Record LH<sub>2</sub> Chill Down start date and time (GMT).

LH<sub>2</sub> Chill Down Date 8/9/01 Time 12:22 GMT

ETM R Brewer Date 8/9/01

70-3 CVM2 JTV2 225

From start of propellant loading until start of LH<sub>2</sub> Fast Fill on OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167, monitor/videotape ET-TPS surfaces. No cryogenic liquid or excessive vapors allowed.

ETM ME 08 Date 8-9-01

Support: COMM

Not Performed: N/A

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01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

70-4 Record LH<sub>2</sub> Slow Fill start date and time (GMT).

LH<sub>2</sub> Slow Fill Date 8-9-01 Time 12:32 GMT

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

70-5 Record LH<sub>2</sub> Fast Fill start date and time (GMT).

LH<sub>2</sub> Fast Fill Date 8-9-01 Time 13:09 GMT

ETM 

ME
08

 Date 8-9-01

Not Performed: N/A

70-6 CVM2 JTV2 225

From start of LH<sub>2</sub> Fast Fill until stable replenish mode is established, scan LH<sub>2</sub> Tank. Alternate OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167 and scan/videotape from LH<sub>2</sub> Aft Dome to Intertank.

ETM 

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08

 Date 8-9-01

Support: COMM

Not Performed: N/A

70-3

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APPROVED

OMI S6444 J01  
APPROVED

70-7

Record start date and time (GMT) for LH<sub>2</sub> Topping.

LH<sub>2</sub> Topping Date 8-9-01 Time 14:17 GMT

ETM ME  
08 Date 8-9-01

Not Performed: N/A

70-8 Record LH<sub>2</sub> Stable Replenish mode start date and time (GMT).

LH<sub>2</sub> Stable Replenish Date 8/9/01 Time 14:49 GMT

ETM Tom Ford Date 8/9/01

Not Performed: N/A

70-9 CVM2 JTV2 225

During LH<sub>2</sub> Stable Replenish mode and until time for final scan (approximately L-1.5 hours), on OTV cameras 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 067/167, **monitor/videotape** ET TPS surfaces including LO<sub>2</sub> Feed Line, LH<sub>2</sub> Feed Line, LH<sub>2</sub> Recirculation Line, LH<sub>2</sub> Aft Dome and manhole covers, LH<sub>2</sub>/LO<sub>2</sub> Umbilicals, and TSM LH<sub>2</sub>/LO<sub>2</sub> Umbilicals. No cryogenic liquid or excessive vapors allowed.

ETM Tom Ford Date 8/9/01

Support: COMM

Not Performed: N/A

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OMI S6444 J01  
APPROVED

### Final SSV Inspection Scan

#### NOTE

Final SSV Inspection Scan should begin not later than 1.5 hours prior to start of T-9 minute hold (approximately L-2 hours) to allow ample time to finish. Final SSV Inspection Scan shall include the ET, SRB's and the Orbiter.

Final SSV Inspection Scan may be altered or partially performed in the event that time constraints will not permit a complete SSV scan prior to start of T-9 minute hold.

70-10 CVM2 JTV2 225

**Perform** Final SSV Inspection Scan with OTV cameras 009/109, 033/133, 054/154, 055/155, 056/156, 065/165, 066/166 and 064/164. Scan passes shall view entire SSV with cameras at full zoom in during final scan.

ETM

Tom Ford

Date

8/9/01

Support: COMM

Not Performed: N/A

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## T-9 Minute Terminal Count

### NOTE

Next step performed for terminal count only and may be not performed if launch is scrubbed prior to pick-up of T-9 minute terminal count. Cameras must be positioned for SSME ignition no later than T-9 minutes. 'Spot' scanning after pick-up of the T-9 minute terminal count is acceptable with CICE concurrence.

Cameras may be positioned for SSME ignition in an arbitrary order.

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for OTV operators to rehearse camera movements.

CVM2 camera positions for terminal count are defined in Table 70-1.

70-11 CVM2 JTV2 225

Ref Table 70-1, position cameras 009/109, 033/133, 056/156, 065/165, 066/166 061/161, 070/170, 071/171 and 067/167 for terminal count.

Support: COMM

ETM Wm Richards II Date 8-9-01

Not Performed: N/A

70-12 ~~Completion of this operation satisfies noted OMRS requirements.~~

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Dev. 70  
No. 01  
JUN 12 '01

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~~OMRSD S00FB0.360-1~~

ETM \_\_\_\_\_ Date \_\_\_\_\_

70-13 Operation - Group 2 Monitoring - LH<sub>2</sub> Chill Down Thru T-0 complete.

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OMI S6444 J01  
APPROVED

**Table 70-1 - CVM2 Camera Positions for Terminal Count**

**NOTE**

This Table defines CVM2 camera positions for terminal countdown. Cameras should be positioned for ignition no later than pick-up of T-9 minutes count. "Spot" scanning after pick-up of the T-9 minute count is acceptable with CICE concurrence.

The Orbiter access arm (OAA) retracts at T-7M30S. Orbiter body flap movement occurs at T-3m50s.

Cameras may be positioned for SSME ignition non-sequentially

Camera positions may be altered real-time with CICE concurrence. Alterations should be determined prior to pick-up of T-9 minute count to allow sufficient time for operators to rehearse camera movements with ice console.

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APPROVED

OMI S6444 J01  
APPROVED

**Group 2 Camera Positions Are Defined As Follows:**

**033/133**

Full zoom out. LO<sub>2</sub> feed line in frame center and MLP deck at bottom.

**055/155**

View ET aft dome with MLP deck just out of view at bottom, ET XT-2058 ring frame at frame top and both SRB's just in view at sides.

**056/156**

View ET aft dome with MLP deck just out of view at bottom. ET XT-2058 ring frame at frame top and both SRB's just in view at sides.

**065/165**

Full zoom out. SSV centered. MLP deck edge just in view at bottom.

**066/166**

ET centered. Intertank to LO<sub>2</sub> Barrel splice at frame top with the majority of Orbiter wing in view.

**067/167**

Center on GUCP for optimum view.

**070/170 and 071/171**

At T-9m00s, zoom in on space shuttle main engine with camera providing best view. Zoom out on SSME for wide angle view with other camera.

**009/109**

At approximately T-3m50s, position to view Orbiter body flap and elevons movement. Afterwards, center on LH<sub>2</sub> umbilical with -Y vertical strut at frame top.

**061/161**

At approximately T-1m30s, tilt-up to GO<sub>2</sub> Vent Footprint. Zoom in. Pause. If footprint is acceptable, zoom out and tilt down to view Orbiter nose/cockpit through liftoff.

**\*\*\* End of Table 70-1 - CVM2 Camera Positions for Terminal Count \*\*\***

**\*\*\* End of Operation 70 \*\*\***

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APPROVED

OMI S6444 J01  
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## OPERATION 80 Final Inspection

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: PAD A/B  
Hazard (Y/N): Y  
Duration (Hrs): 3.0

### NOTE

Final Inspection may not need to be performed depending on LO<sub>2</sub>/LH<sub>2</sub> tanking and launch countdown, as determined by CTC/TTL.

Final Inspection Team stay time guidelines for each level are given in Table 80-1. These guidelines are for reference only and may be deviated from at PICE discretion.

Operation Not Performed: N/A

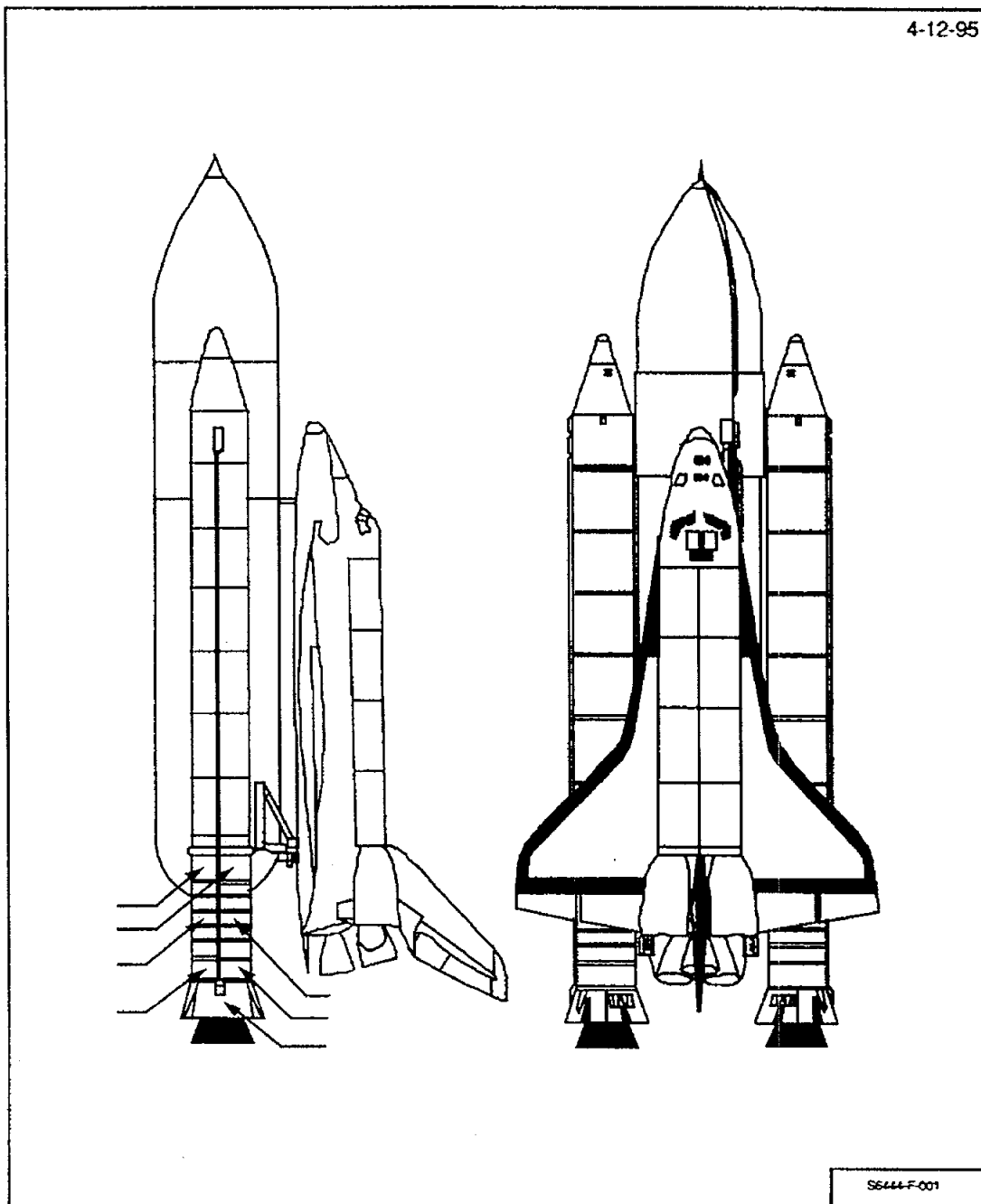


Figure 80-1: Deck (0) Level  
(For Reference Only)

8/9/01

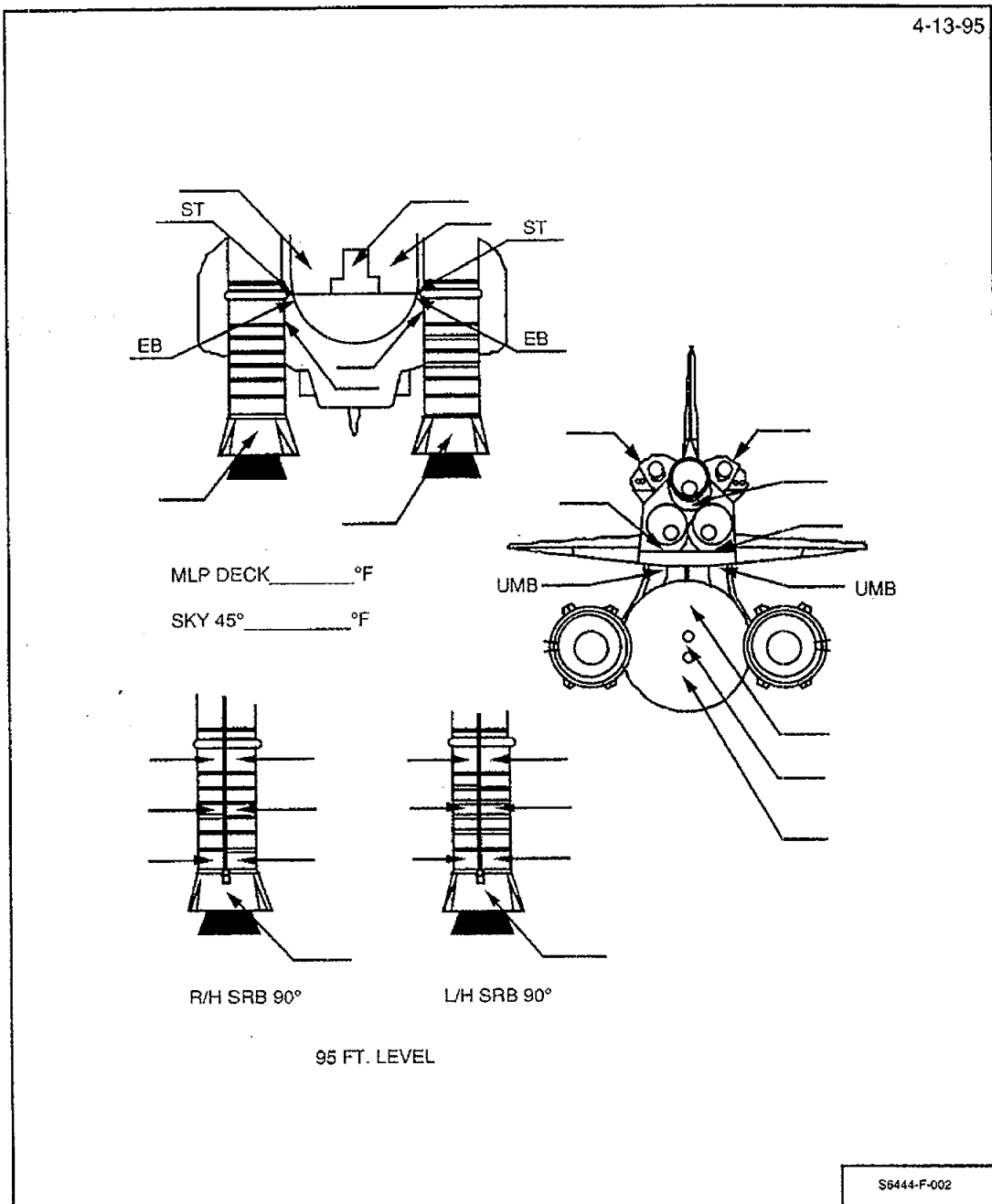


Figure 80-2: Deck (0) and 95 Ft Levels  
(For Reference Only)



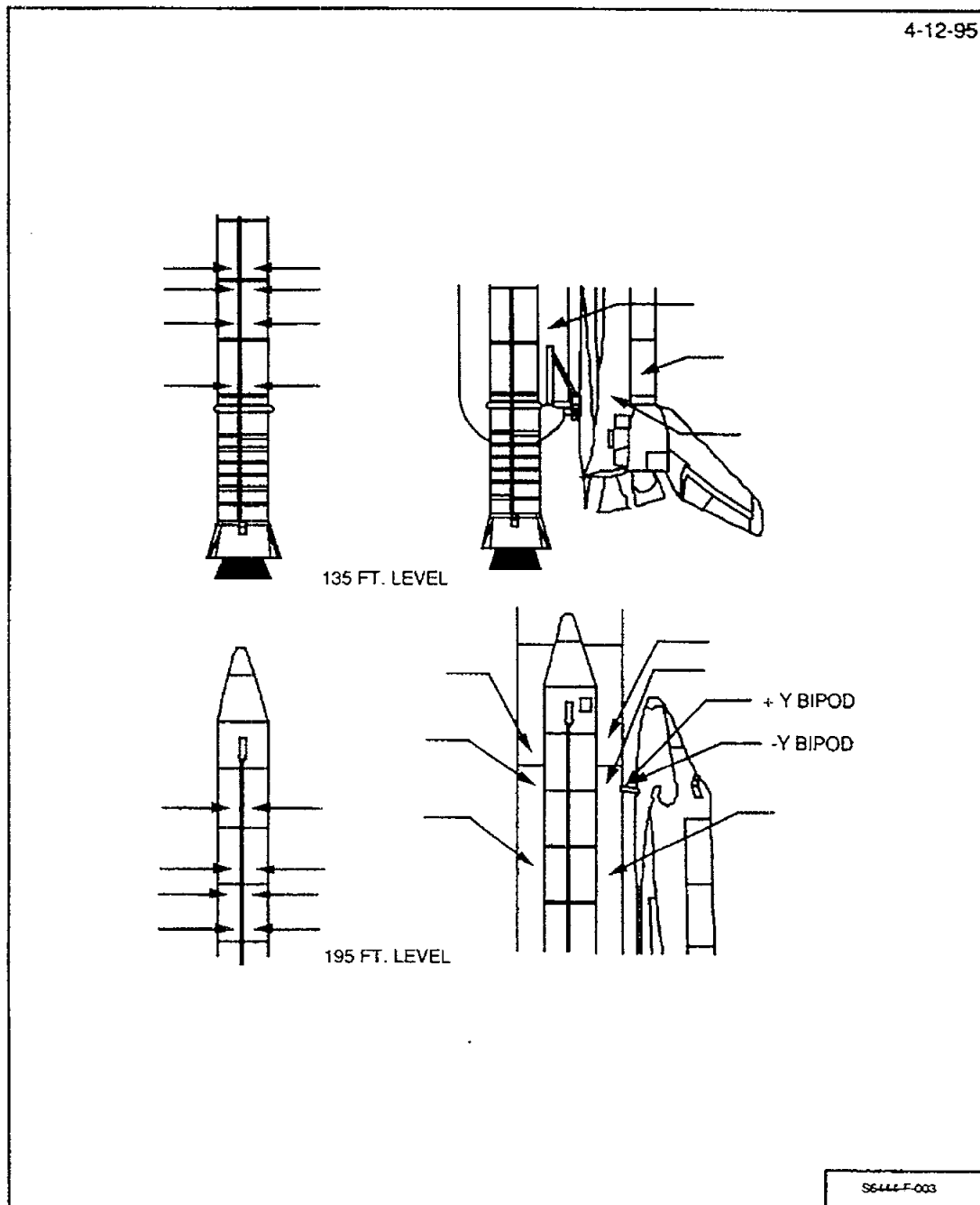


Figure 80-3: 135 and 195 Ft Levels  
(For Reference Only)

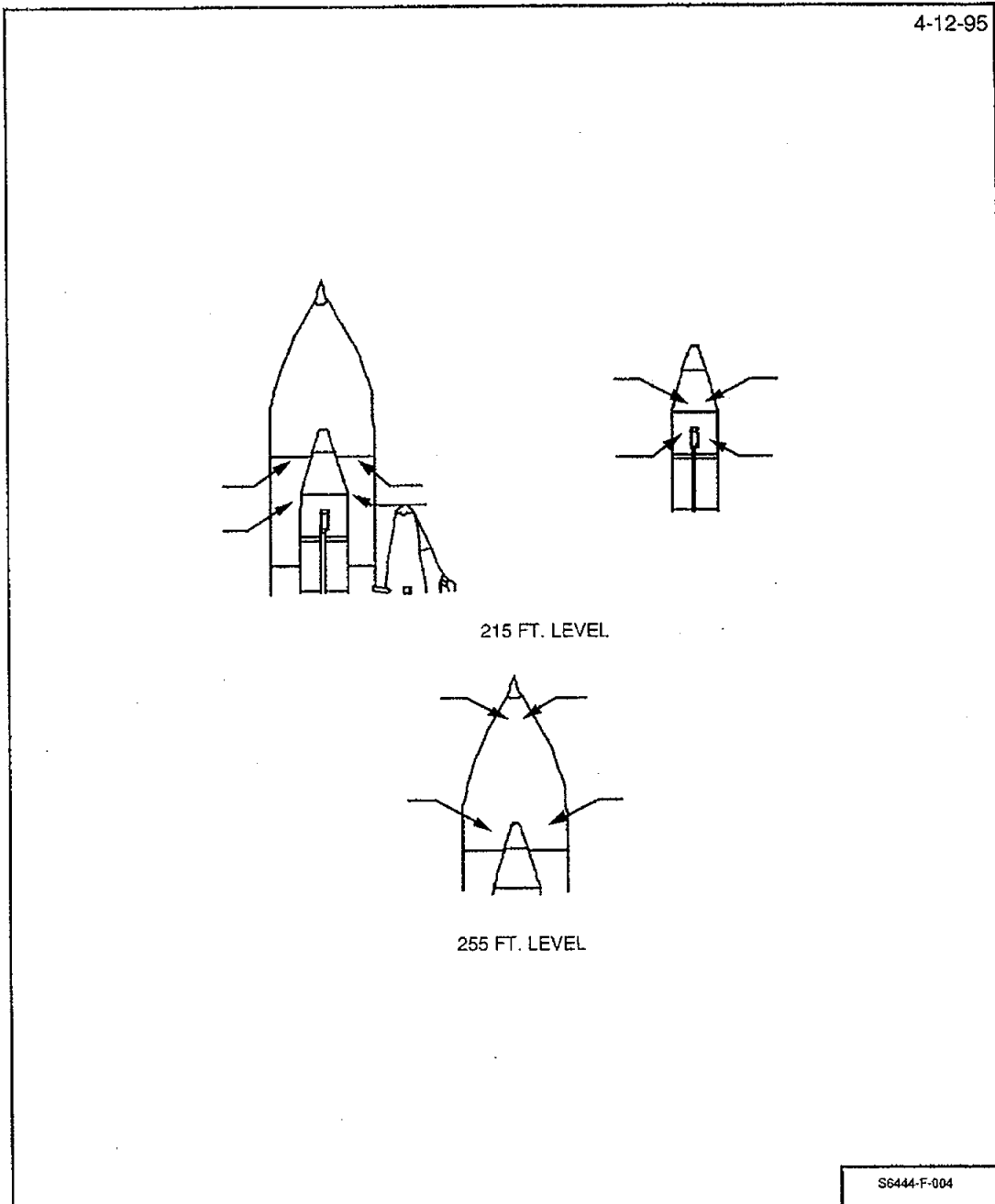


Figure 80-4: 215 and 255 Ft Levels  
(For Reference Only)

**WARNING**

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

**WARNING**

Personnel performing final inspection shall be attired in **Nomex coveralls with gloves and hoods**. Personnel shall have available gloves, hoods, and **ELSA** at all times during walkdown.

Personnel using Sony DKC-ID1 camera shall verify lithium ion battery is securely locked in bayonet connector and the lithium button battery door is locked and taped in place. Personnel shall ensure the flash is not activated on the camera.

Personnel using Kodak DC-50/120 shall verify alkaline batteries are properly installed and the flash is not active on the camera.

Personnel using digital cameras (Sony DKC ID1, Kodak DC-50/120 shall not use these cameras in the presence of a hydrogen leak or an oxygen enriched atmosphere (readings greater than 23 percent O<sub>2</sub>).

**NOTE**

Task Team Leader (TTL) for final inspection is PH-H. Additional personnel (listed below) may be added to the final inspection team with CTC, Launch Director, and Safety concurrence.

JSC Level II	(1)
PH-H	(2)
SFOC ETM	(1)

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OMI S6444 J01  
APPROVED

80-1 Assemble following final inspection team members:

TTL - PH-H (1)  
PH-H (1)  
SFOC ETM (2)  
LMSSC LSS (1)  
SFOC Safety (1)

80-2 Final inspection team **perform** walkdown of SSV and associated facilities as follows: <sup>NOTE</sup> 35 mm Photo's MAY BE NOT PERFORMED WITH TTL CONCURRENCE.

**NOTE**

Tables 80-2 and 80-3 are reference only items. Images are to be taken of targets of opportunity. Images must be taken with 35 mm and digital cameras. Digital images shall be inputted into SIMS.

1. Ref Tables 80-2 and 80-3, photograph SSV points of opportunity during final inspection using 35 mm. **Record** data.

Roll No. N/A

Negative No. N/A

Work order No. N/A

2. Reference Tables 80-2 and 80-3, <sup>① SKI NOT PERFORMED 8/16/01</sup> take digital image of SSV points of opportunity using digital camera.

Description: Final Inspection Team

3. See Figures 80-1 through 80-4, **measure and record** (deg F) SSV external surface temperatures using IR gun(s)/scanners.

① 2nd. Sec. ETM 8/16/01  
SEE P4 I CHANGE RECORD

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OMI S6444 J01  
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**NOTE**

The following substep references inspection areas. However, inspection shall not be limited to these areas. Inspection shall be of entire SSV and specific areas of concern as defined by the TTL, CTC, or Launch Director.

**4. Visually inspect:**

- Orbiter aft engine compartment external surfaces for condensation and ice formations.
- ET TPS surfaces which cannot be observed by the OTV system.
- Specific areas of concern as determined by the TTL, CTC, or Launch Director.

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OMRSD S00U00.020-C-1

OMRSD S00U00.020-D-1

USA  
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067

**80-3** Final Inspection complete. Verify no constraints to continue.

TTL (PH-H)

*Armando Olea - NASA* Date 8/9/01

SFOC-ETM

ME  
08

Date 8-9-01

**80-4** Operation - Final Inspection complete.

ETM

ME  
08

Date 8-9-01

80-8

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APPROVED

OMI S6444 J01  
APPROVED

**Table 80-1 Final Inspection Team Walkdown Stay Times**

**255 Ft Level - 5 Minutes**

- LO<sub>2</sub> Ogive and Barrel acreage
- GO<sub>2</sub> Pressurization Line
- LO<sub>2</sub> Tank Cable Tray
- Visible LH SRB surfaces
- GO<sub>2</sub> Vent Ducts

**215 Ft Level - 20 Minutes**

- ET GH<sub>2</sub> 7 inch Vent Assembly
- ET acreage (between -Z and -Y axis)
- GO<sub>2</sub> vent area
- Orbiter tiles
- Visible SRB surfaces
- Inter tank-to-LO<sub>2</sub> Barrel splice

**195 Ft Level - 10 Minutes**

- LO<sub>2</sub> Feed Line
- ET/Orbiter Bipods (side and bottom view)
- -Y ET/SRB forward attachment (bottom view)
- -Y ET/SRB aft attachments (top view)
- Inter tank splice areas (LO<sub>2</sub> and LH<sub>2</sub>)
- ET acreage (between -Y and +Z axis)
- Orbiter tiles
- Visible LH SRB surfaces

**135 Ft Level - 10 Minutes**

- LH<sub>2</sub> ET/Orbiter Umbilical
- -Y ET/SRB C/T
- -Y Vertical Strut
- LO<sub>2</sub> Feed Line
- ET acreage between -Y axis and +Z axis
- ET/Orbiter attachments (top view)
- Visible LH SRB surfaces
- Orbiter aft fuselage

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OMI S6444 J01  
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**Table 80-1 Final Inspection Team Walkdown Stay Times**

**0 Level - 30 Minutes**

- LH<sub>2</sub> Aft Dome
- ET acreage around +Z axis
- ET acreage around -Z axis
- LO<sub>2</sub> Feed Line
- LH<sub>2</sub> Feed Line
- ET/Orbiter attachments - Bottom view
- ET/Orbiter LH<sub>2</sub> and LO<sub>2</sub> Umbilicals
- T-0 LH<sub>2</sub> and LO<sub>2</sub> Umbilicals
- Space Shuttle Main Engines (SSME)
- Orbiter tiles
- ET/SRB aft attachments
- Visible SRB surfaces
- SRB ignition overpressure sound suppression water troughs

\*\*\* End of Table 80-1- Final Inspection Team Walkdown Stay Times \*\*\*

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APPROVED

OMI S6444 J01  
APPROVED

Table 80-2 Final Inspection Team - Telephotos

TELEPHOTOS - 255 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Notes</u>
GO <sub>2</sub> Vent Ducts	Horizontal	
LO <sub>2</sub> Acreage	Vertical	

TELEPHOTOS - 215 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Notes</u>
-Y Bipod Ramp	Horizontal	From RSS
LO <sub>2</sub> P/L Ice Frost Ramps	Vertical	From RSS; Requires 3-4 shots
GO <sub>2</sub> Seal/Hood	Horizontal	From haunch & RSS
GUCP	Vertical	

TELEPHOTOS - 195 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Notes</u>
-Y Bipod Ramp & Jack PAD C/O	Horizontal	

TELEPHOTOS - 135 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Notes</u>
LH <sub>2</sub> UMB	Horizontal	
-Y Longeron	Vertical	If needed
Jack Pad Closeouts	Horizontal	
LH <sub>2</sub> Acreage	Vertical	



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Table 80-2 Final Inspection Team - Telephotos

TELEPHOTOS - MLP

<u>Photo</u>	<u>Camera Orientation</u>	<u>Notes</u>
LH <sub>2</sub> UMB	Horizontal	From West
LH <sub>2</sub> UMB	Horizontal	From NW
EB-7	Horizontal	
EB-8	Horizontal	
LH <sub>2</sub> Aft Dome	Horizontal	
Third Hard Point C/O	Vertical	
LH <sub>2</sub> Barrel	Horizontal	From North
SSV Overall	Horizontal	From North
SSV Overall	Horizontal	From East
LO <sub>2</sub> F/L Bracket & Bellows	Vertical	XT-1973
LO <sub>2</sub> F/L Bracket	Vertical	XT-1871
LO <sub>2</sub> F/L Bracket	Vertical	XT-1623
LO <sub>2</sub> F/L Bracket	Vertical	ST-1377 & XT-1129
LO <sub>2</sub> F/L Bracket & Bellows	Vertical	XT-1129 & XT-1106 from SE
LO <sub>2</sub> P/L & C/T	Vertical	From SE

600 MM PHOTOS - 255 FT LVL

<u>Photo</u>	<u>Shutter Speed</u>	<u>Notes</u>
GO <sub>2</sub> Vent Ducts	1/30	Contingency

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Table 80-2 Final Inspection Team - Telephotos

600 MM PHOTOS - 215 FT LVL

<u>Photo</u>	<u>Shutter Speed</u>	<u>Notes</u>
-Y GO <sub>2</sub> Seal	1/30	
-Y Bipod Ramp	1/30	Contingency
Jack Pad C/O's	1/4	Difficult if windy
LO <sub>2</sub> F/L	1/15	
-Y Vertical Strut (Crack)	1/30	

600 MM PHOTOS - 195 FT LVL

<u>Photo</u>	<u>Shutter Speed</u>	<u>Notes</u>
-Y Bipod Ramp	1/30	Contingency

600 MM PHOTOS - 135 FT LVL

<u>Photo</u>	<u>Shutter Speed</u>	<u>Notes</u>
LH <sub>2</sub> UMB	1/30	
-Y Vertical Strut (Crack)	1/60	
LO <sub>2</sub> F/L Bellows	1/15	Contingency

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Table 80-2 Final Inspection Team - Telephotos

600 MM PHOTOS - MLP

<u>Photo</u>	<u>Shutter Speed</u>	<u>Notes</u>
LH <sub>2</sub> UMB	1/30	From West
LH <sub>2</sub> UMB	1/30	From NW
LH <sub>2</sub> UMB	1/30	From East
LH <sub>2</sub> UMB Actuator C/O	1/15 or 1/30	From North standing next to water pipe
LO <sub>2</sub> UMB	1/5	Lower Inboard
LO <sub>2</sub> UMB	1/8	Inboard
LO <sub>2</sub> F/L Bracket & Bellows	1/15	One photo to include XT-1978 & XT-1973
LO <sub>2</sub> F/L Bracket	1/15	XT-1871
LO <sub>2</sub> F/L Bracket	1/15	XT-1623
LO <sub>2</sub> F/L Bracket	1/15	XT-1377
LO <sub>2</sub> F/L Bracket	1/30	One photo to include XT-1129 & XT-1106
LO <sub>2</sub> F/L Bracket	1/30	From SE corner, One photo to include XT- 1129 & XT-1106
Jack Pad C/O's	1/15	From SE corner
Ice Frost Ramps or Pal Ramps	1/15 or 1/30	Contingency
LH <sub>2</sub> UMB Inboard	1/15	From East
+Y Longeron	1/15 or 1/30	Contingency
-Y Longeron	1/15	Contingency

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Table 80-2 Final Inspection Team - Telephotos

WIDE ANGLE PHOTOS - 255 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
LO <sub>2</sub> Tank	Vertical	35-70 mm	
GO <sub>2</sub> Vent Ducts	Horizontal	35-70 mm	

WIDE ANGLE PHOTOS - 215 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
Overall GH <sub>2</sub> Vent Line	Horizontal	35-70 mm	
Orbiter Nose, ET -Y Side	Horizontal	35-70 mm	
Orbiter Nose, ET -Y, +Z Side	Horizontal	35-70 mm	From RSS
Forward Half of Vehicle	Vertical	28 mm	From RSS
Entire Orbiter	Vertical	28 mm	From RSS

WIDE ANGLE PHOTOS - 195 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
Aft Part of SSV, LH Wing	Vertical	35-70 mm	
Orbiter Fwd Section, Upper LH <sub>2</sub> Tank	Vertical	35-70 mm	
Bipod, -Y, +Z Intertank Area	Horizontal	35-70 mm	

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Table 80-2 Final Inspection Team - Telephotos

WIDE ANGLE PHOTOS - 135 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
Orbiter Aft Section	Vertical	35-70 mm	
Lower LH <sub>2</sub> Tank & LH SRB	Vertical	35-70 mm	

WIDE ANGLE PHOTOS - MLP

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
Overall Orbiter Left Side	Vertical	28 mm	
ET -Y, +Z Quadrant	Vertical	28 mm	
ET -Z Side	Vertical	28 mm	
ET +Y, +Z Quadrant	Vertical	28 mm	
Overall Orbiter Right Side	Vertical	28 mm	
ET Aft Dome	Horizontal	35-70 mm	
-Z Side of LO <sub>2</sub> T-0; RCS Stinger	Horizontal	35-70 mm	
+Z Side of LO <sub>2</sub> T-; RCS Stinger OMS Nozzle	Horizontal	35-70 mm	
-Z Side of LH <sub>2</sub> T-0; RCS Stinger	Horizontal	35-70 mm	
+Z Side of LH <sub>2</sub> T-0; RCS Stinger OMS Nozzle	Horizontal	35-70 mm	
Overall SSME Cluster	Horizontal	50 mm	-Y Side
SSME No. 2	Horizontal	50 mm	
SSME No. 1, -Z Side	Horizontal	50 mm	
SSME No. 3	Horizontal	50 mm	

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**Table 80-2 Final Inspection Team - Telephotos**

Overall SSME Cluster	Horizontal	50 mm	+Y Side
LO <sub>2</sub> UMB Area	Horizontal	35-70 mm	
LH <sub>2</sub> UMB Area	Horizontal	35-70 mm	
ET/ORB UMB & ORB Lower Surface	Horizontal	28 mm	From under ET

\*\*\* End of Table 80-2 Final Inspection Team - Telephotos \*\*\*

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Table 80-3 Reduced Final Inspection Team Photos

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 255 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
GO <sub>2</sub> Vent Ducts	TELE	Horizontal	

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 215 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
-Y Bipod Ramp	Horizontal	TELE	From RSS
LO <sub>2</sub> P/L Ice/Frost Ramps	Vertical	TELE	From RSS; 2 photos required
GO <sub>2</sub> Seal/Hood	Horizontal	TELE	From RSS
GUCP	Vertical	TELE	
Fwd Half of SSV	Vertical	28 mm	From RSS
Entire Orbiter	Vertical	28 mm	From RSS

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 195 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
-Y Bipod Ramp & Jack Pad C/O's	Horizontal	TELE	

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Table 80-3 Reduced Final Inspection Team Photos

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - 135 FT LVL

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
LH <sub>2</sub> UMB	Horizontal	TELE	
Orbiter Aft Section	Vertical	35-70 mm	

WIDE ANGLE & TELEPHOTO PHOTOGRAPHY - MLP DECK

<u>Photo</u>	<u>Camera Orientation</u>	<u>Lens</u>	<u>Notes</u>
LH <sub>2</sub> UMB	Horizontal	TELE	From West
ET Aft Dome	Horizontal	TELE	
Aft Hard Point Closeout	Vertical	TELE	
LH <sub>2</sub> Tank	Horizontal	TELE	From North
LO <sub>2</sub> Tank	Horizontal	TELE	From North
LO <sub>2</sub> Tank	Horizontal	TELE	From East
LO <sub>2</sub> F/L Bracket Bellows	Horizontal	TELE	XT - 1978 & XT - 1973
LO <sub>2</sub> F/L Bracket	Horizontal	TELE	XT - 1871
LO <sub>2</sub> F/L Bracket	Horizontal	TELE	XT - 1623
LO <sub>2</sub> F/L Brackets	Horizontal	TELE	XT - 1377 & XT - 1129
LO <sub>2</sub> F/L Brackets & Bellows	Horizontal	TELE	XT - 1129 & XT - 1108; from SE
LO <sub>2</sub> P/L & C/T	Horizontal	TELE	From SE
Overall Orbiter Left Side	Vertical	28 mm	
ET -Z Side	Vertical	28 mm	
Overall Orbiter Right Side	Vertical	28 mm	
Overall SSME Cluster -Y Side	Horizontal	28 mm	



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Table 80-3 Reduced Final Inspection Team Photos

Overall SSME Cluster +Y Side	Horizontal	28 mm	
ET/Orb UMB & Orbiter Lower Surface	Horizontal	28 mm	From under ET

\*\*\* End of Table 80-3 - Reduced Final Inspection Team Photos \*\*\*

\*\*\* End of Operation 80 \*\*\*

ET  
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Shop: **SE**  
Cntrl Rm Console: **FR2**  
OPR: **ETM**  
Zone: **NA**  
Hazard (Y/N): **N**  
Duration (Hrs): **4.0**

This operation is contingent upon progression of launch countdown and is performed after start of cryo (LO<sub>2</sub>/LH<sub>2</sub>) loading and subsequent launch scrub, FRF, or WCDDT.

Operation Not Performed: N/A

This operation monitors the External Tank external surfaces during LO<sub>2</sub>/LH<sub>2</sub> drain operations from time of detanking until 1.5 hours after LO<sub>2</sub>/LH<sub>2</sub> low level sensors read dry via OTV 004/104, 009/109, 013/113, 033/133, 042/142, 054/154, 055/155, 056/156, 060/160, 061/161, 062/162, 063/163, 064/164, 065/165, 066/166, 067/167, 068/168, 069/169, 070/170, and 071/171.

Noted requirements satisfied by this operation: OMRS S00E00.021

**90-1**      **Record start date/time (GMT) of LH<sub>2</sub> and LO<sub>2</sub> Tank Drain.**

LH<sub>2</sub> Drain Start Date 8-9-01 Time 22:51 GMT

LO<sub>2</sub> Drain Start Date 8-9-01 Time 21:28 0800 GMT 

ME
08

8-9-01

ETM 

ME
08

 Date 8-9-01

01-15-2001  
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90-2 CVM1 JTV1 223

From start of LO<sub>2</sub> Tank Drain and LH<sub>2</sub> Tank Drain until respective LO<sub>2</sub>/LH<sub>2</sub> low level sensors read dry, **monitor** ET external surfaces including LO<sub>2</sub> Feed Line, LH<sub>2</sub> Feed Line, LH<sub>2</sub> Recirculation Line, LH<sub>2</sub> Aft Dome and manhole covers, LH<sub>2</sub>/LO<sub>2</sub> Umbilicals, TSM LH<sub>2</sub>/LO<sub>2</sub> Umbilicals via OTV cameras. No cryogenic liquid or excessive vapors allowed.

ETM 

ME
08

 Date 8-9-01

Support: COMM

90-3 Record date/time (GMT) when LO<sub>2</sub>/LH<sub>2</sub> low level sensors read dry.

LH<sub>2</sub> Sensors Dry Date 8-10-01  
8-9-01 Time 00:11 GMT  
(1)

LO<sub>2</sub> Sensors Dry Date 8-9-01 Time 23:06 GMT

ETM 

ME
08

 Date 8-9-01

① D. Seale ETM 8/9/01

ET
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8/9/01

01-15-2001  
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APPROVED

90-4 CVM1 JTV1 223

Monitor ET external surfaces including LO<sub>2</sub> Feed Line, LH<sub>2</sub> Feed Line, LH<sub>2</sub> Recirculation Line, LH<sub>2</sub> Aft Dome and manhole covers, LH<sub>2</sub>/LO<sub>2</sub> Umbilicals, TSM LH<sub>2</sub>/LO<sub>2</sub> Umbilicals via OTV cameras for 1.5 hours after LO<sub>2</sub>/LH<sub>2</sub> low level sensors have read dry. No cryogenic liquid or excessive vapors allowed. Record date/time (GMT) when monitoring complete.

LH<sub>2</sub> Complete Date 8-10-01 Time 0141 GMT

LO<sub>2</sub> Complete Date 8-10-01 Time 00:36 GMT

ETM W. M. Richards II Date 8-9-01

Support: COMM

90-5 Completion of this operation satisfies noted requirements.

OMRSD S00E00.021 8/9/01

90-6 Operation - LO<sub>2</sub>/LH<sub>2</sub> Drain Monitoring complete.

\*\*\* End of Operation 90 \*\*\*

01-15-2001  
APPROVED

OMI S6444 J01  
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## OPERATION 100 Console Securing

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 0.5

### 100-1

CTIF	TBC	136
TBC	CTC	232

OTV support for ET thermal protection system evaluation no longer required.

### 100-2

CTIF	JYVR	138
------	------	-----

Perform the following:

1. Turn off video recorders.
2. Remove tape cartridges.
3. OTV support no longer required.

Support: COMM

### 100-3

CTIF	CVM1	222
	CVM2	

Secure consoles by setting all monitors to "Off" position.  
Report completion.

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

**NOTE**

Perform next step only after a successful launch.

100-4

**CTIF**

Remove photo processing laptop computer from Firing Room.

Not Performed:

ME  
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8-9-01

100-5

CTIF	TBC	136
TBC	CTC	232

Firing Room 2, ice frost monitoring area securing complete.

100-6

Operation 100 - Console Securing complete.

ETM

ME  
08

Date 8-9-01

\*\*\* End of Operation 100 \*\*\*

ET  
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8/9/01

100-2

01-15-2001  
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OMI S6444 J01  
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## OPERATION 110 Summary Tape

Shop: SE  
Cntrl Rm Console: FR2  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 18.0

### NOTE

Observations/concerns observed during count are typically recorded on the summary tape real-time (trouble tape).

#### 110-1 CICE

After launch or launch scrub, prepare a summary tape to include observations/concerns noted during count.

#### 110-2 Operation Summary Tape complete.

ETM

ME  
08

Date 8-9-01

\*\*\* End of Operation 110 \*\*\*

01-15-2001  
APPROVED

OMI S6444 J01  
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## OPERATION 120 Post Drain Walkdown

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: PAD A/B  
Hazard (Y/N): Y  
Duration (Hrs): 2.0

### NOTE

Post drain walkdown performed only after start of cryo (LH<sub>2</sub>/LO<sub>2</sub>) loading and subsequent launch scrub.

Operation Not Performed: N/A

### WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

Personnel shall wear **hardhats** and **flame retardant coveralls** while performing post drain walkdown.

### NOTE

Post drain walkdown typically commences approximately 1.5 hours after LH<sub>2</sub>/LO<sub>2</sub> low level sensors read dry.

Post drain walkdown performed in support of a 24 hour scrub turnaround is typically coincident with the L-20 hour pre-launch walkdown for the ensuing launch attempt.



01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

**NOTE**

NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are walkdown optional participants:

NASA Engr	(4)
SFOC Engr	(2)
LMSSC-LSS	(1)
Boeing LSS	(1)
SFOC Safety	(1)

- 120-1** NASA Lead ET Mechanical Systems Engineer (PH-H) verify essential personnel on station, properly attired, and ready to proceed with post drain walkdown.

**Essential Personnel**

NASA Engineering (PH-H)	1
SFOC Engineering (ETM)	1

**NOTE**

"Hands-on Investigation" is applicable only to those areas which are not understood or fully defined and which cannot be adequately evaluated otherwise.

- 120-2** Perform post drain walkdown as follows:

- 1. Visually inspect** ET TPS exterior surfaces after detanking and warm-up (approximately T + 4 hours after drain is initiated) from the MLP, FSS, and RSS as access permits.
- 2. Perform** hands-on investigation of all areas suspected of violating Doc: NSTS 08303 (LI) NSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA (LI)

OMRSD S00E00.031

USA  
JAN 067

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120-2

01-15-2001  
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OMI S6444 J01  
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120-3 Walkdown complete. All discrepancies identified. No constraints to continue.

PH-H *[Signature]* Date 8-9-01  
*Jose Rivera, NASA/KSL*

ETM *[Signature]* Date 8-9-01  
*Wm Richards II*

120-4 Operation Post Drain Walkdown complete.

\*\*\* End of Operation 120 \*\*\*

STEP 120-3

**STS-105 POST DRAIN SSV/MLP INSPECTION**

KSC Debris Team

August 9, 2001

The post drain inspection of STS-105, MLP-3, and Pad A FSS was conducted on August 9, 2001 from 2200 to 2300 hours under dark conditions. Nevertheless, visibility was adequate for the inspection.

No MLP deck or facility anomalies were detected.

Likewise, no anomalies were observed on the SRB's.

Orbiter tiles, RCC panels, and SSME's were in nominal configuration. RCS thruster paper covers were intact.

The GOX vent arm was in the retracted position. OTV monitoring from LCC Firing Room 2 was performed prior to and during GVA retraction and had verified no anomalies with the vent system or the ET nose cone and forward LO2 tank TPS. The post detank Pad inspection also verified no anomalies in this area. No topcoat was missing from the nose cone area under the GOX vent seal footprint.

The External Tank was in excellent condition. Bipod jack pad standoff closeouts were in nominal condition. All PDL repairs were intact with none protruding. No crushed foam or debris was detected in the LO2 feedline support brackets. The stress relief crack in the -Y vertical strut forward facing TPS was still present, but not nearly as pronounced as had been observed with LCC firing room OTV. A small area of frost was observed on the +Y longeron TPS closeout with LCC firing room OTV during de-tanking. No TPS anomaly was observed in this area during the post drain inspection (Ref. photos located in SIMS, Ice Team Bucket).

The only ice remaining was located in the LO2 feedline bellows, -Y aft fairing-to-ET/SRB cable tray interface, the lower EB fittings, and on the ET/ORB umbilical purge vents.

In summary, no IPR conditions and no flight hardware concerns were detected during the post drain inspection. There are no constraints for the next cryoload.

Jorge Rivera, NASA-KSC

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01-15-2001  
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## OPERATION 130 Post Launch Walkdown

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: PAD A/B  
Hazard (Y/N): Y  
Duration (Hrs): 3.0

2.0  
3.0  
A20

### NOTE

Do not perform this operation after launch scrub.

Operation Not Performed:

ME  
OB

8-9-01

### WARNING

Personnel working at heights greater than 4 feet and within 6 feet of an unguarded edge shall wear a **safety harness** with a **lanyard** secured to an approved tie off point, substantial structural member (no handrails) or a properly installed life line.

Personnel participating in walkdown shall wear **hardhats** and **flame retardant coveralls**.

### NOTE

NASA ET Mechanical Engineer (PH-H) or designee shall function as team leader. Following personnel are walkdown optional participants:

NASA Engr	(3)
SFOC Engr	(2)
LMSSC-LSS	(1)
Boeing LSS	(2)
SRB ELE	(1)
Thiokol-LSS	(1)
SFOC Safety	(1)

01-15-2001  
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- 130-1 NASA (PH-H) verify following personnel on station, properly attired, and ready to proceed with post launch walkdown.

WC  
150  
USA  
JUN 12 '01

Dev. 130  
No. 01

P

ET  
01

SEE DEV 8/9/01

Essential Personnel		
NASA	PH-H	1
SFOC	ETM	1

- 130-2 Perform Post Launch Walkdown as follows:

1. Ref Table 130-1, **visually inspect** post launch pad/area to identify any lost flight or ground systems hardware and debris sources.
2. Ref Table 130-2, **document/SIMS photograph** launch PAD area configuration.

Description: Post Launch Walkdown

USA  
VM  
067

OMRSD S00U00.010-1

- 130-3 Walkdown complete. Debris sources and lost flight hardware identified. No constraints to continue.

PH-H N/A Date N/A

ETM N/A Date N/A

- 130-4 Operation - Post Launch Walkdown complete.

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Table 130-1 Post Launch Walkdown Inspection Areas

Record mission info, PAD, date, and time:

STS \_\_\_\_\_

PAD \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

SRB Hold-down posts (HDP)

Inspect for damage, stud hang-up Epon shim material, ordnance fragments, doghouse blast covers, erosion, missing hardware, debris. Record Results:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

N/A

MLP Deck

SRB aft skirt purge lines  
SRB T-0 umbilicals  
Tail service masts (TSM's)  
MLP deck

195 Ft Level

Orbiter access arm (OAA)

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Table 130-1 Post Launch Walkdown Inspection Areas

215 Ft Level - GH2 Vent Line/GUCP

Latch position  
Loose cables  
Damage from SRB plume  
Damage to the QD

255 Ft Level - GO<sub>2</sub> Vent Arm, Ducts, Hood

Seals  
Hood windows, doors, latches

Fixed Service Structure (FSS)

Cable tray covers  
Signs  
Hydraulic leaks  
Slidewire baskets

PAD Apron/Acreage

Vehicle hardware and/or flight TPS materials  
Facility debris

N/A

Table K-1 PAD Apron/Acreage Items

<u>Description</u>	<u>Location</u>

\*\*\* End of Table 130-1 - Post Launch Walkdown Inspection Areas \*\*\*

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**Table 130-2 Post Launch Photos (MLP, FSS, PAD, Apron, Pad Acreage)**

**MLP 0-level**

- 1 Ea HDP No. 1, 2, 5 & 6 (HDP shoe and Epon shim)
- 1 Ea HDP No. 3, 4, 7 & 8 (blast cover down to HDP base)
- 1 Ea SRB T-O umbilical
- 1 Ea overall view SRB exhaust cutouts\

Any unusual or debris-related damage to the facility; sound suppression water pipes, TSM's cracks in MLP deck, witness panels, handrails, etc.

Any flight hardware debris (tiles, SRB ordnance fragments)  
Any facility debris (nuts, bolts, cable tray covers, etc.)

**FSS**

Close-ups of GUCP and latching mechanism  
Overall views of GO<sub>2</sub> vent hood/ducts, if damaged  
Any flight hardware or facility debris  
Any unusual or debris-related damage to the facility

**PAD Apron/PAD Acreage**

Any flight hardware or unusual facility debris objects

Any unusual or debris-related damage to the PAD (such as missing brick in the flame trench), perimeter fence, etc.

**\*\*\* End of Table 130-2 - Post Launch Photos (MLP, FSS, PAD, Apron, Pad Acreage) \*\*\***

**\*\*\* End of Operation 130 \*\*\***



01-15-2001  
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021  
A20

## OPERATION 140 Film Review

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 15.0

### NOTE

This operation may be not performed after launch scrub.

WC  
150  
USA  
JUN 12 '01

Day 140  
No. 01

ET  
01  
8/9/01  
SEE DEV

Operation 140 Not Performed:

ME  
08  
8-9-01

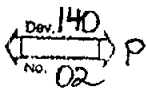
- 140-1 Review engineering films for FOD issues, launch anomalies, or other discrepancies.
- 140-2 Operation - Film Review complete.

ETM N/A Date N/A

\*\*\* End of Operation 140 \*\*\*

ET  
01  
8/9/01

WC  
150  
USA  
JUL 9 '01



ET  
01  
8/9/01  
SEE DEV

ET  
01  
8/9/01

ET  
01

8/9/01

01-15-2001  
APPROVED

OMI S6444 J01  
APPROVED

## OPERATION 150 Final Report

Shop: SE  
Cntrl Rm Console: NA  
OPR: ETM  
Zone: NA  
Hazard (Y/N): N  
Duration (Hrs): 0.5

### NOTE

This operation may be not performed after launch scrub.

Operation 150 Not Performed:

ME  
OB

8-9-01

- 150-1 Assemble final report by attaching following reports to this OMI.  
Reference each to this step.

Post Launch PAD Assessment  
SRB Assessment  
Launch Film Review  
Launch Day Video Review  
Orbiter Landing Assessment  
ET Separation Review

- 150-2 Final report assembly complete.

WC  
150  
USA  
DOW 150  
No. 01  
JUN 12 '01

WC  
150  
USA  
JUN 12 '01

~~OMRSD S00U00.011-1~~

ETM N/A Date N/A

- 150-3 Operation - Final Report complete.

\*\*\* End of Operation 150 \*\*\*

```

*****
*
* PROGRAM PRA120 SELECTION CRITERIA
*
* -----
*
* RPT TYPE: IPR
*
* PR GROUP:
*
* WORK AREA CD:
*
* PR ELEM CD:
*
* STS NO:
*
* Starting RPT DT: 06/28/01
*
* Ending RPT DT: 08/22/01
*
* LRU or Non-LRU: B
*
* PRACA EFF CD:
*
* EICN:
*
* RPT STATUS: OP
*
* DETECTED DURING: S6644
*
* -----
*
* Sorted by DETECTED DURING, PR ELEM CD, and EICN
*
*****

```

56444  
 720281826  
 AUG 27 '01  
 SPC 151

DATE: 08/22/01 16:21  
REPORT CODE: PRA1200A

PROBLEM REPORTING AND CORRECTIVE ACTION SYSTEM  
PROBLEMS BY DETECTED DURING

PAGE:

\*\*\*\*\*  
\*  
\* NO DATA FOUND ON THE DATABASE FOR THE SELECTED PARAMETERS \*  
\*  
\*\*\*\*\*

\*\*\*\*\*  
\*  
\* END OF REPORT \*  
\*



AUG 22 '01

56444 724286822

[illegible]

ET  
01  
8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale</i> <i>ETM</i> <i>4/27/01</i>	Contractor Test Conductor <i>T. Ford</i> <i>4/27/01</i>		Gov't OPR <i>P. H. H. 2</i>		
Contractor Test Project Engineer	Other <i>U.S. ETM</i>		Gov't Project Engineer		
Contractor Safety <i>R. Seale</i> <i>28 Jun 01</i>	Other		Gov't Test Director or Contractor Chief TC		

Page Number: 10-1 Step Number: 10-3

Add Operation 11 as follows:

## OPERATION 11 - IR Camera Setup

## WARNING

Hard hats required on the Pad when SSV is not present.

## CAUTION

Exercise care to avoid dropping equipment, fasteners, etc. from RSS Roof. All tools must be tethered.

## 11-1 Install IR Camera at RSS Roof site as follows:

1. **Rotate** camera housing back cover to open position by removing bolts with flat washers (20 pl). **Retain** bolts/washers for reinstallation.
2. **Remove** camera housing front cover by removing fasteners (2 pl). **Reinstall** fasteners after cover removal. **Retain** cover for reinstallation after IR Camera Unit removal.
3. **Install** IR Camera Unit into camera housing. **Secure** IR Camera Unit in housing by locking spring pin at lower, left.

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/27/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>	REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- Effectivity: <input type="checkbox"/> ORB /FLT	<input type="checkbox"/> ET <input type="checkbox"/> GSE <input type="checkbox"/> FRCS/POD /FLT	<input checked="" type="checkbox"/> STS-104	<input type="checkbox"/> SSME /FLT	
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP	<input type="checkbox"/> Design Req'ts	<input type="checkbox"/> Haz Step(s)	<input type="checkbox"/> PPE	<input checked="" type="checkbox"/> Internal Review Req.
Contractor OPR <i>R. Seale</i> <i>ETM</i> <i>4/27/01</i>	Contractor Test Conductor <i>TO 27</i> <i>6-28-01</i>	Gov't OPR <i>Vol 1</i> <i>PA-12</i> <i>4-27-01</i>	Gov't Project Engineer	
Contractor Test Project Engineer	Other <i>Tom Ford</i> <i>4-27-01</i>	Gov't Test Director or Contractor Chief TC		
Contractor Safety <i>AK Jarboe</i> <i>28 Jun 01</i>	Other			

**WARNING**

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

**CAUTION**

Do NOT allow opened back cover to exert undue force on cables once cables have been connected.

4. **Connect:**
  - OTV Coaxial cable
  - Pan & Tilt cable
  - Controller cable
  - Power cable
5. **Rotate camera housing back cover into closed position. Secure back cover by installing bolts/flat washers (20 pl). Tighten bolts wrench tight.**

**WARNING**

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Insure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain, eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear solvex gloves and chemical splash goggles. When working at eye level or above wear a face shield over goggles.

WS002.a 04-13-01

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/27/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>10.01</u>	DILS No. <u>89333(s)</u>	Page 3 of 5
REV/CHG/VER <b>J 01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.		
Contractor OPR <u>R. Seale ETM 4/27/01</u>		Contractor Test Conductor <u>7027 6-28-01</u>		Gov't OPR <u>PH-H2</u>
Contractor Test Project Engineer		Other <u>Tom Ford 4.27.01</u>		Gov't Project Engineer
Contractor Safety <u>RL Sealey 28 Jun. 01</u>		Other		Gov't Test Director or Contractor Chief TC

6. Clean IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl Alcohol.
7. Perform functional checkout of IR Camera Unit using local controller if required at Task Team Leader (TTL) discretion.

S/S 7 Not Performed: 

8-1-01

NASA PH-H:

MRPDate: 4/1/01

USA ETM:

R. SealeyDate: 8/1/01

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/27/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle	ET 01
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>10-01</u>	DILS No. <u>89333(8)</u>	Page 4 of 5
REV/CHG/VER <b>J 01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.				
Contractor OPR <i>R. Seale ETM 4/27/01</i>		Contractor Test Conductor <i>T.O 27 628-01</i>		Gov't OPR <i>PH-A2</i>
Contractor Test Project Engineer		Other <i>Tom Ford 4.27.01</i>		Gov't Project Engineer
Contractor Safety <i>RE Seale 28 Jun 01</i>		Other		Gov't Test Director or Contractor Chief TC

## Install IR Camera at Camera Site 2 as follows:

1. Rotate camera housing back cover to open position by removing eight ea. bolts using Phillips screwdriver. **Retain** bolts/washers for reinstallation.
2. Remove camera housing front cover by removing securing bolt(s). **Reinstall** bolt(s) after cover removal. **Retain** cover for reinstallation after IR Camera Unit removal.
3. Install IR Camera Unit into camera housing. **Secure** IR Camera Unit in housing by tightening set screw(s) wrench tight at lower, left/right.

## WARNING

Power cable is live. Care should be exercised when connecting power cable to avoid electric shock.

4. Connect:
  - OTV Coaxial cable
  - Pan & Tilt cable
  - Controller cable (2 pl)
  - Power cable
5. Rotate camera housing back cover into closed position. **Secure** back cover by installing bolts (8 pl). **Tighten** bolts using Phillips screwdriver.

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/27/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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SEE PFI CHANGE RECORD  
R. Seale ETM 7/13/01



# TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- Effectivity: <input type="checkbox"/> ORB /FLT	<input type="checkbox"/> ET <input type="checkbox"/> GSE <input type="checkbox"/> FRCS/POD /FLT	<input checked="" type="checkbox"/> STS-104 <input type="checkbox"/> SSME /FLT			
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.			
Contractor OPR <i>R. Seale 4/27/01</i>		Contractor Test Conductor <i>T027 6-28-01</i>		Gov't OPR <i>PH-HZ 4-27-01</i>	
Contractor Test Project Engineer		Other <i>Tom Ford 4-27-01</i>		Gov't Project Engineer	
Contractor Safety <i>AK Seabury 28 Jun. 01</i>		Other		Gov't Test Director or Contractor Chief TC	

## WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Insure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain, eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear **solvex gloves** and **chemical splash goggles**. When working at eye level or above wear a **face shield** over goggles.

WS002.a 04-13-01

- Clean IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl Alcohol.
- Perform functional checkout of IR Camera Unit using local controller if required at Task Team Leader (TTL) discretion.

S/S 7 Not Performed: N/A

NASA PH-H: *Robert A. Seale* Date: 7-18-01  
USA ETM: *R. Brewer* Date: 7-18-01

**Reason:** Establish operational controls for installation of the IR Camera units on the RSS Roof and Camera Site 2.

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/27/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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[illegible]

ET  
01

8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		REV/CHG/VER <b>J01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.			
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim Taylor 4-9-01</i>		Govt OPR <i>PH-112 4-6-01</i>	
Contractor Test Project Engineer <i>Paula L. Conway 4/9/01</i>		Other <i>Mark Wollen 4/5/01</i>		Govt Project Engineer	
Contractor Safety		Other		Govt Test Director or Contractor Chief TC <i>Mark Taylor NTD 4/9/01</i>	

Page Number: 50-4 Step Number: 50-8

Add following (one line below end of step text):

OMRS S00FB0.350-1

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>50-01</u>	DILS No. <u>87031</u> (S)	Page 2 of 4
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.		
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim Taylor 4-9-01</i>		Govt OPR <i>PH-HZ</i>
Contractor Test Project Engineer <i>Mark Wollam 4/5/01</i>		Govt Project Engineer <i>Robert F. [unclear] 4-6-01</i>		
Contractor Safety <i>CONNOLEY 4/9/01</i>		Govt Test Director or Contractor Chief TC <i>Mark Wollam 4/5/01</i>		

Page Number: 50-5 Step Number: 50-10

Add steps 50-10.1 with preceding Note and 50-10.2 as follows:

## NOTE

Excessive vapors are defined as being more severe than those described in NSTS 08303 (LI) NSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA or NSTS 16007 (LI) NSTS PROGRAM LAUNCH COMMIT CRITERIA - HAZARDOUS GAS SUBSYSTEM.

50-10.1 CTIF CVM1 222  
CVM2

From start of LO<sub>2</sub> / LH<sub>2</sub> loading until Prepressurization (LO<sub>2</sub> at T-2M55s and LH<sub>2</sub> at T-1M57s):

- Monitor following ET-Orbiter MPS areas for leakage:
  - LO<sub>2</sub> Feedline (portion external to the Intertank)
  - LH<sub>2</sub> Feedline
  - LH<sub>2</sub> Recirculation Line
  - LH<sub>2</sub> Aft Dome Manhole Cover(s)
  - ET-Orbiter LO<sub>2</sub> / LH<sub>2</sub> Umbilical Disconnects
  - LH<sub>2</sub> T-0 Umbilical
  - LO<sub>2</sub> T-0 Umbilical
- Verify no visible cryogenic liquid of excessive vapors.

OMRS (general) S00FB0.360-1

ETM

ME  
OBDate 8-9-01Not Performed: N/ASPC  
161  
AUG 22 '01

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/5/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <b>50-01</b>	DILS No. <b>87031 (5)</b>	Page 3 of 4	
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family		Cause Code Org (B,D,E,G,H,I,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.			
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim Taylor 4-9-01</i>		Gov't OPR <i>PH-12</i>	
Contractor Test Project Engineer <i>Mark Wollam 4/5/01</i>		Gov't Project Engineer <i>Robert F. Speer 4-6-01</i>			
Contractor Safety		Gov't Test Director or Contractor Chief TC <i>Stephen J. Payne 4/9/01</i>			

50-10.2 CTIF CVM1 222  
CVM2

Monitor and videotape record following ET TPS surface areas and GO<sub>2</sub> Vent Area during LO<sub>2</sub> / LH<sub>2</sub> loading through Prepressurization (LO<sub>2</sub> at T-2M55s and LH<sub>2</sub> at T-1M57s):

- LH<sub>2</sub> Aft Dome
- LH<sub>2</sub> Barrel
- Intertank (external)
- LO<sub>2</sub> Tank
- GO<sub>2</sub> Vent Area
- Protuberances

OMRS (general) S00FB0.005-1

ETM



Date **8-9-01**

Not Performed: N/A

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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USA FORM 4-30A

SPC  
151

AUG 22 '01

ET  
01

8/9/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <b>50-01</b>	DILS No. <b>87031</b> (S)	Page 4 of 4	
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family		Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim T. 4-9-01</i>		Gov't OPR <i>PH-H2 4-6-01</i>	
Contractor Test Project Engineer <i>Mark Wollen 4/5/01</i>		Gov't Project Engineer			
Contractor Safety		Gov't Test Director or Contractor Chief TC <i>4/9/01</i>			

Page Number: 50-9 Step Number: 50-18

Change step 50-18 as follows:

was: "... are 38 knots or ..."

is: "... are 38 knots (peak as measured at 60 feet above ground) or ..."

Page Number: 50-9 Step Number: 50-19

Add step 50-19.1 as follows:

## 50-19.1 CTIF

ET-Orbiter MPS monitoring for leakage and ET TPS Surface Areas and GO<sub>2</sub>  
Vent Area monitoring/recording for launch complete.

OMRSD S00FB0.005-1  
OMRSD S00FB0.360-1

ETM

*R. Seale*Date *8/9/01*Not Performed: N/A

Reason: Ensure text of operational instructions complies with the OMRS.

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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[illegible]

DATE/TIME: 04/10/2001 05:38:10

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
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2001-04-09

ET  
01

8/3/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>60-01</u>	DILS No. <u>87032</u> (S)	Page 1 of 1	
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>	
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim [unclear] 4-9-01</i>		Gov't OPR <i>Robert F. [unclear] PH-112 4-6-01</i>	
Contractor Test/Project Engineer <i>Paul Celery Conway 4/3/01</i>		Other <i>Mark Wollam 4/5/01</i>		Gov't Project Engineer	
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC <i>Stephen J. [unclear] 4/9/01</i>	
<p>Page Number: 60-1 Step Number: 60-1</p> <p>Delete OMRS S00FB0.005-1 and S00L00.150-1 from Note preceding step 60-1: "Noted ... operation." ①</p>					
<p>Page Number: 60-6 Step Number: 60-12</p> <p>Delete OMRSD S00FB0.005-1 and OMRSD S00L00.150 <sup>and</sup> from step 60-12. ①</p>					
<p>Reason: These OMRSD's have been moved to Operation 50.</p>					
Originator (print) R. Seale.	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/5/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle

## DEVIATION INDEX

**HAD NO.**

☒ PERMANENT      ☐ TEMPORARY      ☐ TEMP RECYCLE

S6444 REV: J CHG:01 (DMI)

DATE/TIME: 04/10/2001 05:38:16

TASK NO./SEQ. NO. 70

[illegible]

KSC FORM 4-470 (C/G 07/93)

ET  
01

8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>70-01</u>	DILS No. <u>87033</u> (S)	Page 1 of 1	
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family		Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.			
Contractor OPR <i>R. Seale ETM 4/5/01</i>		Contractor Test Conductor <i>Jim Taylor 4-9-01</i>		Govt OPR <i>PH-A12 4-6-01</i>	
Contractor Test Project Engineer <i>Carl Cherry Conway 4/9/01</i>		Other <i>Mark Wollam 4/5/01</i>		Gov't Project Engineer <i>ME TO</i>	
Contractor Safety		Other		Gov't Test Director, or Contractor Chief, TC <i>Stephen J. Payne 4/9/01</i>	
<p>Page Number: 70-1 Step Number: 70-1</p> <p>Delete OMRS S00FB0.005-1 and S00FB0.360-1 from Note preceding step 70-1: "Noted ... operation." ①</p>					
<p>Page Number: 70-6 Step Number: 70-12</p> <p>Delete OMRSD S00FB0.005-1 and OMRSD S00FB0.360-1 <sup>and</sup> from step 70-12. ①</p>					
<p>Reason: These OMRSD's are satisfied via Operation 50.</p>					
Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle

[illegible]

8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <b>130-01</b>	DILS No. <b>87034</b> (S)	Page 1 of 1
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,I,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE		<input checked="" type="checkbox"/> Internal Review Req.		
Contractor OPR <i>R. Seale Firm 4/5/01</i>		Contractor Test Conductor <i>Jim Taylor 4-9-01</i>		Gov't OPR <i>Det. F. F. 4-6-01</i>
Contractor Test Project Engineer <i>Paul Wiley 4/8/01</i>		Other <i>Mark Wollen 4/5/01</i>		Gov't Project Engineer
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC <i>Anthony Payne 4/9/01</i>
<p>Page Number: 130-2 Step Number: 130-2</p> <p>Add following Note prior to step 130-2:</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"><p><b>NOTE</b></p><p>Post Launch Walkdown must be performed prior to washdown and Pad being opened for normal work.</p></div>				
<p>Reason: Ensure text of operational instructions complies with OMRS S00U00.010-1.</p>				
Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>
		<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle		

[illegible]

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8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>140-01</u>	DILS No. <u>87035</u> (S)	Page 1 of 1	
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family		Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor QPR <i>R. Seale ERM 4/5/01</i>		Contractor Test Conductor <i>Jim Sutor 4-9-01</i>		Gov't MPR <i>PH-112</i>	
Contractor Test Project Engineer <i>Mark Wollan 4/5/01</i>		Other <i>Mark Wollan 4/5/01</i>		Gov't Project Engineer <i>460</i>	
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC <i>4/9/01</i>	

Page Number: 140-1 Step Number: 140-1

Add following Note and change step 140-1 to read as follows:

## NOTE

Analysis of Pad Debris Inspection Results determines priority for film review. All critical film (as determined by the Debris Team) must be reviewed as soon as possible after launch and no later than 36 hours prior to entry (of the Orbiter into the earth's atmosphere).

- 140-1 Review and analyze all engineering launch (and flight film) to:
- Identify any debris damage to the SSV
  - Identify flight vehicle or ground system damage that could affect Orbiter flight operations or future SSV launches.

Z90  
WA  
USA

OMRSD S00U00.011-1

ETM: N/A Date N/A

Reason: Ensure text of operational instructions complies with the OMRS S00U00.011-1.

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 4/5/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

Dev No. <u>140-02</u>		DILS No. <u>89334(5)</u>		Page 1 of 5
TOP/WAD No. <b>S6444</b>	REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.				
Contractor OPR <u>R. Seale ETM 6/27/01</u>		Contractor Test Conductor <u>PH-112</u>		Gov't OPR <u>PH-112</u>
Contractor Test Project Engineer		Other <u>PH-112</u>		Gov't Project Engineer
Contractor Safety <u>R. Seale 28 Jun. 01</u>		Other <u>PH-112 6-27-01</u>		Gov't Test Director or Contractor Chief TC
<p>Page Number: 140-1 Step Number: 140-2</p> <p>Add Operation 141 as follows:</p> <p><b>OPERATION 141 - IR Camera Removal</b></p> <p><b>NOTE</b> IR CAMERA REMOVAL MAY BE NOT PERFORMED IF IR CAMERA(S) NOT INSTALLED OR LAUNCH SCRUB DECLARED.</p> <p><b>WARNING</b> Hard hats required on the Pad when SSV is not present.</p> <p><b>CAUTION</b> Exercise care to avoid dropping equipment, fasteners, etc. from RSS Roof. All tools must be tethered.</p> <p><b>Remove IR Camera from RSS Roof site as follows:</b></p> <ol style="list-style-type: none"><li><b>Remove</b> fasteners (2 pl) from camera housing front. <b>Retain</b> fasteners for reinstallation when front cover is installed.</li><li><b>Install</b> camera housing front cover using previously removed fasteners (2 pl). <b>Tighten</b> fasteners (2 pl) wrench tight.</li></ol>				
Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 6/27/01
		<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp		<input type="checkbox"/> Temp-Recycle

① ZPI R. Seale ETM 8/9/01  
SEE P+I CHANGE RECORD



# TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,I,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale</i> 6/27/01	Contractor Test Conductor <i>TO 27 6-28-01</i>		Gov't OPR <i>PA-HZ 6-28-01</i>		
Contractor Test Project Engineer	Other		Gov't Project Engineer		
Contractor Safety <i>RK Saubey</i> 28 Jun. 01	Other <i>SE Check 6-27-01</i>		Gov't Test Director or Contractor Chief TC		

## WARNING

Power cable is live. Care should be exercised when disconnecting power cable to avoid electric shock.

## CAUTION

Do NOT allow back cover to exert undue force on cables when opening/rotating back over.

3. **Rotate** camera housing back cover to open position by removing bolts with flat washers (20 pl). **Retain** bolts/washers for reinstallation.
4. **Disconnect:**
  - Power cable
  - Pan & Tilt cable
  - Controller cable
  - OTV Coaxial cable
5. **Unlock** spring pin at lower, left to release IR Camera Unit in camera housing. **Remove** IR Camera Unit from camera housing by carefully sliding it out the back opening of the camera housing. **Support** IR Camera Unit during removal.
6. **Rotate** camera housing back cover into closed position. Do not pinch cables. **Secure** back cover by reinstalling bolts/flat washers (20 pl). **Tighten** bolts wrench tight.

SPC 161

AUG 22 '01

Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>6/27/01</b>	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>140.02</u>	DILS No. <u>89334(5)</u>	Page 3 of 5
REV/CHG/VER <b>J 01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- Effectivity: <input type="checkbox"/> ORB /FLT		<input type="checkbox"/> ET <input type="checkbox"/> GSE <input type="checkbox"/> FRCS/POD /FLT	<input checked="" type="checkbox"/> STS-104 <input type="checkbox"/> SSME /FLT	
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts		<input type="checkbox"/> Haz Step(s)	<input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.	
Contractor OPR <i>R. Seale ETM 6/27/01</i>		Contractor Test Conductor <i>TO 27 6-28-01</i>		Gov't OPR <i>[Signature] PH-HL 6-28-01</i>
Contractor Test Project Engineer		Other		Gov't Project Engineer
Contractor Safety <i>AK Sealey 28 Jun. 01</i>		Other <i>[Signature] 6-27-01</i>		Gov't Test Director or Contractor Chief TC

## WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Insure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain, eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear solvex gloves and chemical splash goggles. When working at eye level or above wear a face shield over goggles.

WS002.a 04-13-01

7. Clean IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymple cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl Alcohol.
8. Route IR Camera Unit to VAB 3K1 for refurb/checkout.

NASA PH-H: N/A Date: N/AUSA ETM: N/A Date: N/A

① NOT PERFORMED

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8/9/01

SPC  
151

AUG 22 '01

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 6/27/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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USA FORM 4-30A

8/9/01

ET  
01

① R. Seale ETM 8/9/01  
SEE P&I CHANGE RECORD

TOP/WAD No. <b>S6444</b>		REV/CHG/VER <b>J 01</b>	<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104		Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT			
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale ETM 6/27/01</i>		Contractor Test Conductor <i>T027 6-28-01</i>		Gov't OPR <i>[Signature] PH-12 6-28-01</i>	
Contractor Test Project Engineer		Other		Gov't Project Engineer	
Contractor Safety <i>R. Seale 28 Jun. 01</i>		Other <i>SE Check 6-27-01</i>		Gov't Test Director or Contractor Chief TC	

141-2  
11-1  
①

Remove IR Camera from Camera Site 2 as follows:

1. **Remove** bolt(s) from camera housing front. **Retain** bolt(s) for reinstallation when front cover is installed.
2. **Install** camera housing front cover using previously removed bolt(s). **Torque** bolt(s) wrench tight.

**WARNING**

Power cable is live. Care should be exercised when disconnecting power cable to avoid electric shock.

**CAUTION**

Do NOT allow back cover to exert undue force on cables when opening/rotating back over.

3. **Loosen** screws (8 pl) securing camera housing back cover using Phillips screwdriver. **Rotate** camera housing back cover to open position. **Retain** bolts/washers for reinstallation.
4. **Disconnect:**
  - Power cable
  - Pan & Tilt cable
  - Controller cable (2 pl)
  - OTV Coaxial cable
5. **Unscrew** set screw(s) at lower, left/right to release IR Camera Unit in camera housing. **Remove** IR Camera Unit from camera housing by carefully sliding it out the back opening of the camera housing. **Support** IR Camera Unit during removal.

SPC 161

AUG 22 '01

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 6/27/01	<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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8/9/01

ET  
01

TOP/WAD No. <b>S6444</b>		Dev No. <u>140.02</u>	DILS No. <u>89334(5)</u>	Page 5 of 5
REV/CHG/VER <b>J 01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-104				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.				
Contractor OPR <i>R. Seale ETM 6/27/01</i>		Contractor Test Conductor <i>To 27 6-28-01</i>		Gov't OPR <i>PH-HZ</i>
Contractor Test Project Engineer		Other		Gov't Project Engineer <i>6-28-01</i>
Contractor Safety <i>HL Sealey 28 Jun. 01</i>		Other <i>Richards 58check 6-27-01</i>		Gov't Test Director or Contractor Chief TC
<p>6. Coat camera housing back cover O-ring with a single coat of (1) tube /jar 6505-00-133-8025 Petroleum Jelly, Vaseline (or equivalent).</p> <p>5. Rotate camera housing back cover into closed position. Do not pinch cables. Secure back cover by installing screws (8 pl). Tighten screws wrench tight using Phillips screwdriver.</p>				
<p style="text-align: center;"><b>WARNING</b></p> <p>Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Insure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Skin contact may cause redness and pain, eye contact will cause severe eye irritation and may result in permanent damage. Inhalation of vapors in high concentrations has a narcotic effect on the central nervous system. Personnel shall wear solvex gloves and chemical splash goggles. When working at eye level or above wear a face shield over goggles.</p> <p style="text-align: right;">WS002.a 04-13-01</p>				
<p>7. Clean IR Camera Unit lens plate using (1) roll 8305-00-519-3144 Rymplé cloth dampened with (4) ounces 6810-00-543-7915 Isopropyl Alcohol.</p> <p>8. Route IR Camera Unit to VAB 3K1 for refurb/checkout.</p>				
<p>NASA PH-H: <u>N/A</u> Date: <u>N/A</u></p> <p>USA ETM: <u>N/A</u> Date: <u>N/A</u></p> <p style="text-align: center;">NOT PERFORMED</p> <p style="text-align: right;">8/9/01</p>				
Reason: Establish operational controls for removal of IR Camera units from the RSS Roof and Camera Site 2.				
Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 6/27/01
		<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle		

SEE PFI CHANGE RECORD  
 R. Seale ETM 8/9/01

8/9/01

ET  
01

[illegible]

8/13/01



## TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <b>150-01</b>	DILS No. <b>87036<sup>(S)</sup></b>	Page 1 of 1
REV/CHG/VER <b>J01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>30</b>
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-100				
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT				
Affected: <input checked="" type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input checked="" type="checkbox"/> Internal Review Req.				
Contractor OPR <i>R. Seale</i> <i>4/5/01</i>		Contractor Test Conductor <i>Jim Taylor</i> <i>4/9/01</i>		Gov't OPR <i>PH-H2</i>
Contractor Test Project Engineer <i>Kelly Kelly Connolly</i> <i>4/9/01</i>		Other <i>Mark Wollam</i> <i>4/5/01</i>		Gov't Project Engineer <i>PH-H2</i>
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC <i>Stephen Page</i> <i>4/9/01</i>
<p>Page Number: 140-1 (s/b 150-1) Step Number: 150-2</p> <p>Delete following from step 150-2:</p> <p>"OMRSD S00U00.011-1"</p> <p>Reason: OMRS S00U00.011-1 pertains to Film Review (Operation 140).</p>				
Originator (print) <b>R. Seale</b>	SPDMS ID <b>T08011</b>	Phone <b>1-3348</b>	Organization <b>ETM</b>	Date <b>4/5/01</b>
		<input checked="" type="checkbox"/> Perm <input type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle		<b>ET</b> <b>01</b>

## DEVIATION INDEX

WAD NO.

☐ PERMANENT    ☒ TEMPORARY    ☐ TEMP RECYCLE

S6444 REV: J CHG: (OMI)

DATE/TIME: 08/07/2001 10:39:02

TASK NO./SEQ. NO. 40

[illegible]

**ET**  
**OT**

8/13/01





TCN: 2868276

TOP/WAD Deviation

TOP/WAD No. <b>S6444</b>		Dev No. <u>40-01</u>	DILS No. <u>90271(5)</u>	Page 1 of 2	
REV/CHG/VER <b>J 01</b>		<input type="checkbox"/> In Family <input checked="" type="checkbox"/> Out of Family <input type="checkbox"/> NMA	Cause Code Org (B,D,E,G,H,L,N,O,P,Q,S,T,V) <b>E</b>	Cause Code Reason 10-Tech Chg 20-Proc Chg 30-Auth Error 40-Rewrite <b>20</b>	
First Use <input type="checkbox"/> SRB BI- <input type="checkbox"/> ET <input type="checkbox"/> GSE <input checked="" type="checkbox"/> STS-105					
Effectivity: <input type="checkbox"/> ORB /FLT <input type="checkbox"/> FRCS/POD /FLT <input type="checkbox"/> SSME /FLT					
Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input type="checkbox"/> Internal Review Req.					
Contractor OPR <i>R. Seale ETM 8/1/01</i>		Contractor Test Conductor		Gov't OPR <i>PH-HZ 8/1/01</i>	
Contractor Test Project Engineer		Other <i>CE Check 8/1/01</i>		Gov't Project Engineer	
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC	

Page Number: 40-1 Step Number: 40-1

Change step 40-1 to read as follows:

**40-1** Configure laptop computer to perform digital image processing, analysis, and recording as follows:

- Connect** following:
  - power cable to laptop computer
  - "Dazzle" capture card to laptop parallel port
  - "Y" adapter to laptop PS2 port
  - keyboard to keyboard port on "Y" adapter
  - mouse to mouse port on "Y" adapter
  - monitor to laptop
- Insert** Xircon Network Card into Personal Computer PCMCIA port.
- Connect** ethernet (gray) cord to Xircon Network Card.
- Remove** terminator from video cable.
- Plug** BNC-to-RCA adapter into end of video cable.
- Plug** video cable into "Dazzle" DVC "video in".
- Power-up** Trouble Console VCR.

Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 8/1/01	<input type="checkbox"/> Perm <input checked="" type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle
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Affected: <input type="checkbox"/> OMRS/ACOMC/OMP <input type="checkbox"/> Design Req'ts <input type="checkbox"/> Haz Step(s) <input type="checkbox"/> PPE <input type="checkbox"/> Internal Review Req.					
Contractor OBR <i>R. Seale ETM 8/1/01</i>		Contractor Test Conductor <i>PA-112 8-6-01</i>		Gov't OBR <i>PA-112 8-6-01</i>	
Contractor Test Project Engineer		Other <i>PA-112 8/1/01</i>		Gov't Project Engineer	
Contractor Safety		Other		Gov't Test Director or Contractor Chief TC	
<p>8. Log-on to KSC Ground Ops.</p> <p>9. Click-on Start/Programs/Dazzle.</p> <p>10. Confirm as operational and record results.</p> <p>Results: <b>FUNCTIONAL</b></p> <p>ETM: <i>PA-112 8/8/01</i> <i>WM Richards II</i></p>					
<p><u>Reason:</u> Utilize capability to record video (i.e., OTV cameras) in digital format.</p>					
Originator (print) R. Seale	SPDMS ID T08011	Phone 1-3348	Organization ETM	Date 8/1/01	<input type="checkbox"/> Perm <input checked="" type="checkbox"/> Temp <input type="checkbox"/> Temp-Recycle

D NO./REVISION		EFFECTIVITY	
56444 J 01		STS-105 (RUN 1)	
PAGE	SEQ/OP-STEP	CHANGE	APPROVAL QE/ENG
DEV 100 Pg 4/5	11-2	CORRECTED STEP NUMBER WAS: 11-1 IS: 11-2	D. Seale ETM 7/10/01
DEV 140-02 Pg 1/5	141-1	CORRECTED STEP NUMBER WAS: 11-1 IS: 141-1	D. Seale ETM 8/9/01
DEV 140-02 Pg 1/5	141-1	ADDED NOTE FOR NOT PERFORM QUALIFIER	D. Seale ETM 8/9/01
DEV 140-02 Pg 3/5	141-1	ADDED "NOT PERFORMED"	D. Seale ETM 8/9/01
DEV 140-02 Pg 4/5	141-2	CORRECTED STEP NUMBER WAS: 11-1 IS: 141-2	D. Seale ETM 8/9/01
DEV 140-02 Pg 5/5	141-2	ADDED "NOT PERFORMED"	D. Seale ETM 8/9/01
80-7	80-2	ADDED NOTE (FOR QUALIFIER) AND NOT PERFORMED B.N. FOR S/S 1	D. Seale ETM 8/16/01